4.2 SOILS

4.2.1 Significance Criteria

An adverse impact on soils would be considered significant and would require mitigation if Project construction or operation would:

- increase erosion rates or reduce soil productivity by compaction or soil mixing to a level that would prevent successful rehabilitation and eventual re-establishment of vegetative cover to the recommended or preconstruction composition and density;
- reduce agricultural productivity for longer than 3 years as a result of soil mixing, structural damage, or compaction;
- increase exposure of human or ecological receptors to potentially hazardous levels of chemicals or explosives due to the disturbance of contaminated soils or to the discharge or disposal into soils of hazardous materials; or
- result in the need for a significantly wider construction right-of-way and/or the increased potential for pipe exposure during operations due to the presence of unconsolidated and unstable soils.

4.2.2 Existing Soil Resources

The soils crossed by the proposed Project were analyzed using the State Soil Geographic (STATSGO) database developed by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) for use in regional, multi-state, river basin, State, and multi-county resource planning. STATSGO spatial data are compiled by combining geologically and topographically related soil series found in county soil surveys into larger map units called Map Unit Identifiers (MUIDs). The B-Line would cross 7 MUIDs comprising 42 soil components (see Figure 4.2.2-1), while the Arrowhead Extension would cross only 1 MUID comprising 14 soil components. The IID Lateral would cross 5 MUIDs comprising 79 soil components (see Figure 4.2.2-2). The characteristics of soils that would be crossed by the small segment of pipeline route in Arizona and at the sites of the Ehrenberg Compressor Station, El Paso Meter Station, Blythe Meter Station, Rannells Trap, Ogilby Meter Station, and El Centro Meter Station were further assessed using county soil surveys.

Pipeline Facilities

The soils that would be crossed by the B-Line in La Paz County, Arizona consist of silt and sandy loams and sands. The soils that would be crossed by the B-Line and Arrowhead Extension in the northern portion of Riverside County, California include sandy loams, silty clay loams, and silty clays. Soils in the southern portion of Riverside County that would be crossed by the B-Line include silty clays, sandy loams, gravelly loamy sands, gravelly sands, sand, dune land, and badlands. In the Palo Verde Valley, the soils are primarily formed in sediments deposited by the Colorado River. These soils are highly productive and are ideal for agricultural use if irrigated due to mineral content. Soil types are diverse along the B-Line in Imperial County, California, with loamy and fine sands; sandy, gravelly, and clay loams; and clay and silty clays, with badland and rock outcrops. Many areas along the southern portion of the B-Line route in Imperial County have a gravelly desert pavement present over the surface soils.

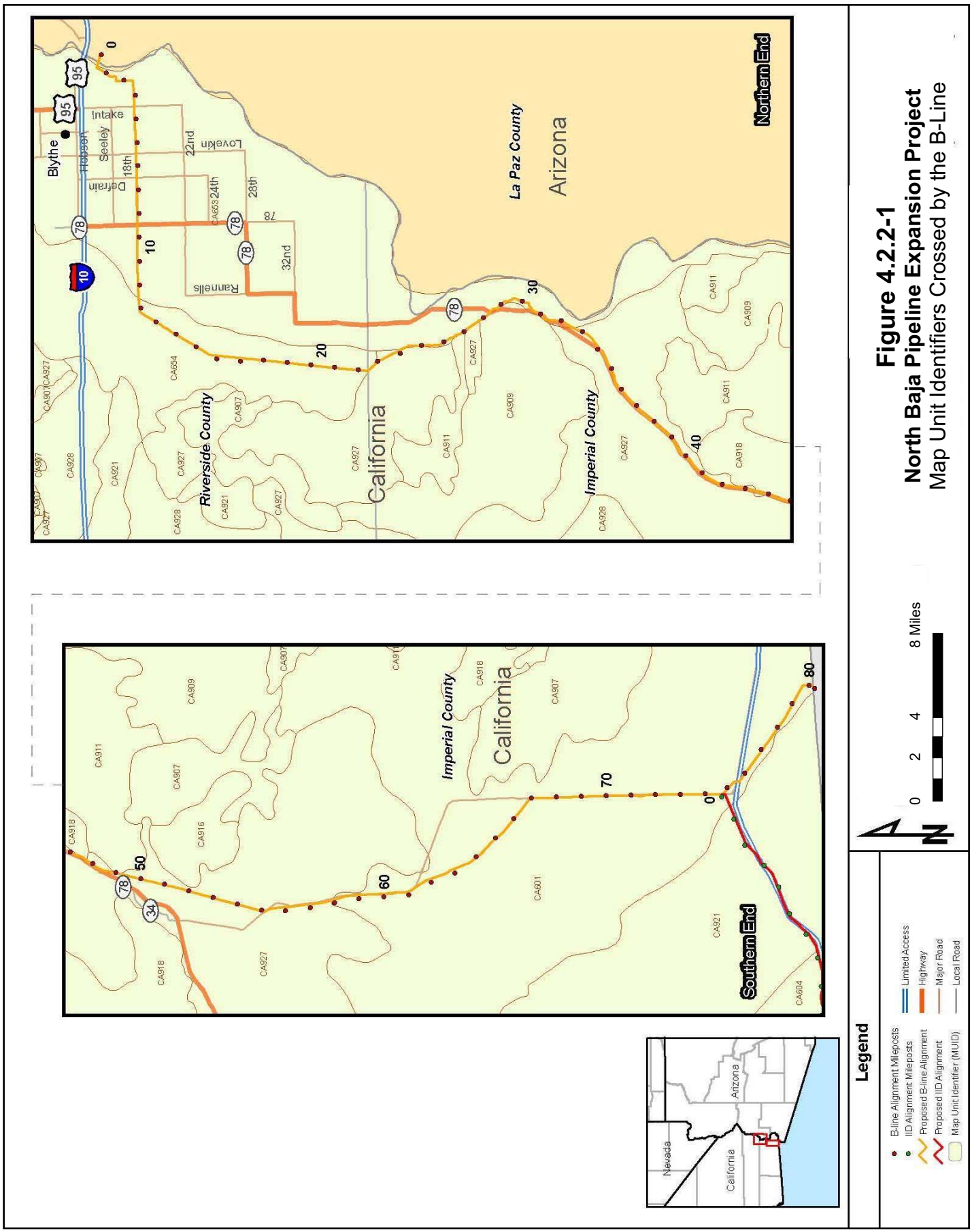

Figure 4.2.2-1
North Baja Pipeline Expansion Project
Map Unit Identifiers Crossed by the B-Line

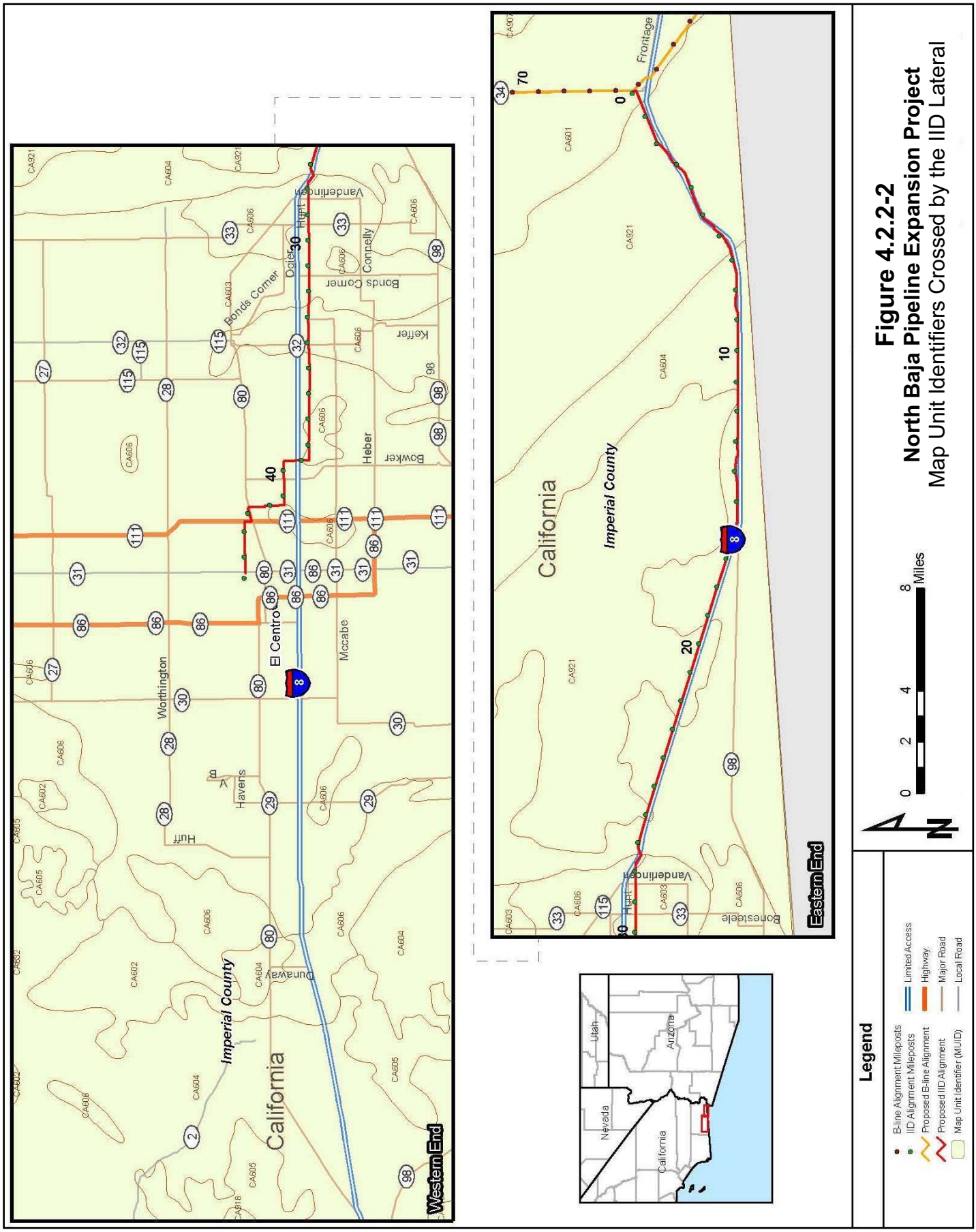

Figure 4.2.2-2
North Baja Pipeline Expansion Project
Map Unit Identifiers Crossed by the IID Lateral

Soils that would be crossed by the eastern portion of the IID Lateral, including the area of the Imperial Sand Dunes, are typically loose, sandy, excessively drained soils. West of the dunes area into the East Mesa area, the soils are typically sandy, loamy, and well drained to excessively drained. Many areas within the East Mesa area have a gravelly desert pavement present over the surface soils. West of the East Mesa area through the Imperial Valley, the soils are predominantly fine, silty loamy soils that are well to moderately well drained with patches of coarse loamy, coarse silty, and sandy well- to moderately well-drained soils interspersed. The soils in the Imperial Valley are primarily mineral-rich sediments historically deposited by Lake Cahuilla. These soils are highly productive due to their mineral content, and are ideal for agricultural use if irrigated.

The agricultural land in the Palo Verde and Imperial Valleys is irrigated with systems using water from irrigation drains and canals.

The soils along the B-Line, the Arrowhead Extension, and the IID Lateral were evaluated to identify prime farmland and major soil characteristics that could affect construction or increase the potential for construction-related soil impacts. The primary limiting characteristics include high water erosion potential, high wind erosion potential, and shallow depth to bedrock. Each soil component was evaluated for these limitations, and then the percentage of each MUID with these limitations was summarized. The percentage, along with the length of pipeline route in each MUID, was used to estimate the acreage of soils with limitations that would be crossed by the B-Line, the Arrowhead Extension, and the IID Lateral. Table 4.2.2-1 summarizes by MUID and milepost the acres of soil limitations that would be affected by the proposed pipeline facilities. The nature and prevalence of each major characteristic are discussed below.

Erosion Potential from Water – Erosion is an ongoing, natural process that can be accelerated by human disturbance. Factors such as soil texture, structure, slope, vegetative cover, rainfall intensity, and wind intensity can influence the severity of erosion. Soils most susceptible to erosion by water are typified by bare or sparse vegetative cover, non-cohesive soil particles, and moderate to steep slopes. Soils typically more resistant to erosion include those that occupy low relief areas, are well vegetated, and have high infiltration capacity and internal permeability. Approximately 36 percent of all soils that would be affected by the Project are highly susceptible to erosion by water.

Of the soils along the B-Line, about 45 percent (454.4 acres) would be susceptible to erosion by water. Along the Arrowhead Extension, about 16 percent (3.6 acres) of the soils would be susceptible to erosion by water. Along the IID Lateral, 10 percent (36.4 acres) of the soils would be susceptible to erosion by water. Because the majority of the terrain in the areas that exhibit a high potential for water erosion is relatively flat, erosion by water is not expected to be a significant concern.

Erosion Potential from Wind – Wind erosion processes are less affected by slope angles. Wind-induced erosion often occurs on dry, fine-textured soil where vegetative cover is sparse and strong winds are prevalent. About 26 percent of all soils that would be affected by the Project are susceptible to wind erosion.

Sixteen percent (162.9 acres) of the soils that would be affected by the B-Line would be susceptible to wind erosion, while less than 0.1 percent (0.6 acre) along the Arrowhead Extension would be susceptible. About 53 percent (191.7 acres) of the soils along the IID Lateral route exhibit a high potential for erosion by wind.

TABLE 4.2.2-1

Soil Characteristics Associated with the North Baja Pipeline Expansion Project

Facility/Mileposts	Map Unit Identifiers (MUID)	Affected Acres [a]	High Water Erosion Potential (acres) [b]	High Wind Erosion Potential (acres) [b]	Potential for Shallow Bedrock (acres) [b]
B-Line					
0.0 – 11.4	CA653	145.1	20.4 [c]	5.1 [c]	0.0 [c]
11.4 – 22.3	CA654	138.7	19.1	24.2	11.5
22.3 – 24.1	CA927	22.9	19.1	0.0	1.3
24.1 – 26.6	CA653	31.8	25.5	6.4	0.0
26.6 – 26.9	CA911	3.8	2.5	1.3	2.5
26.9 – 27.7	CA927	10.2	8.9	0.0	0.0
27.7 – 28.2	CA653	6.4	2.5	0.0	6.4
28.2 – 28.5	CA909	3.8	2.5	1.3	0.0
28.5 – 31.0	CA653	33.1	11.5	1.3	29.3
31.0 – 32.0	CA653	11.5	10.2	2.5	0.0
32.0 – 57.8	CA927	328.4	292.7	0.0	16.5
57.8 – 79.8	CA601	280.0	39.5	120.9	0.0
B-Line Subtotal		*1,015.6*	*454.4*	*162.9*	*67.5*
Arrowhead Extension					
0.0 – 2.1	CA653	22.4	3.6 [c]	0.6 [c]	0.0 [c]
IID Lateral					
0.0 – 0.6	CA601	5.6 [d]	0.8	2.4	0.0
0.6 – 6.9	CA921	61.3 [d]	0.0	61.3	0.0
6.9 – 11.7	CA604	46.5 [d]	0.0	0.0	0.0
11.7 – 12.1	CA921	3.1	0.0	3.1	0.0
12.1 – 19.7	CA604	55.1	0.0	0.0	0.0
19.7 – 23.0	CA921	24.1	0.0	24.1	0.0
23.0 – 26.1	CA604	22.5	0.0	0.0	0.0
26.1 – 26.6	CA921	3.6	0.0	3.5	0.0
26.6 – 27.8	CA604	8.7	0.0	0.0	0.0
27.8 – 28.3	CA606	3.6	4.1	0.0	0.0
28.3 – 32.9	CA603	33.5	0.0	33.5	0.0
32.9 – 34.9	CA606	14.5	14.3	0.0	0.0
34.9 – 37.3	CA603	17.5	0.0	17.7	0.0
37.3 – 39.3	CA606	14.5	14.4	0.0	0.0
39.3 – 41.7	CA603	17.5	0.0	17.6	0.0
41.7 – 42.1	CA606	2.9	2.8	0.0	0.0
42.1 – 45.7	CA603	26.2	0.0	28.5	0.0
IID Lateral Subtotal		*360.7*	*36.4*	*191.7*	*0.0*
Total Acres		1,398.7	494.4	355.2	67.5

[a] Affected acres were calculated using a 105-foot-wide construction right-of-way for the B-Line, a 60-foot-wide and 100-foot-wide construction right-of-way for the Arrowhead Extension, and a 60-foot-wide construction right-of-way for the IID Lateral unless otherwise noted. Aboveground facilities, extra workspaces, and access roads are not included.

[b] It was assumed that the frequency of occurrence of each individual component soil series along the pipeline route within each MUID is the same as its percent composition within the MUID.

[c] Does not include soils in that portion of the route where the pipeline would be within the road or road shoulder.

[d] Based on an 80-foot-wide construction right-of-way.

Sources: STATSGO Database; Imperial Irrigation District 1967; U.S. Department of Agriculture, Soil Conservation Service 1974; U.S. Department of Agriculture, Soil Conservation Service 1980.

Shallow Bedrock – Soils were evaluated to identify areas as containing shallow bedrock (hard bedrock within 5 feet of the soil surface). The presence of shallow bedrock could indicate the need for blasting. About 5 percent of all soils that would be affected by the Project have the potential for shallow bedrock. All of these areas occur along the B-Line route. There is the potential for about 7 percent (67.5 acres) of the soils along the B-Line route to exhibit bedrock at a depth of less than 5 feet; however, based on past construction activity associated with the A-Line, shallow bedrock that would require blasting is expected to be encountered only at about MP 29.5. None of the soils along the Arrowhead Extension or the IID Lateral have the potential for shallow bedrock.

Prime Farmland – The NRCS (2003) defines prime farmland as "land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, and oilseed crops." This designation includes cultivated land, pasture, woodland, or other lands that are either used for food or fiber crops, or are available for these uses. Urbanized land, built-up land, and open water cannot be designated as prime farmland. Prime farmland typically contains few or no rocks, has an adequate and dependable water supply, is permeable to water and air, is not excessively erodible or saturated with water for long periods, and is not subject to frequent, prolonged flooding during the growing season. Soils that do not meet the above criteria may be considered prime farmland if the limiting factor is mitigated (e.g., by draining or irrigating). Additionally, the CDC designates farmlands of Statewide and local importance. Farmland of Statewide importance is similar to prime farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture. Land must have been used for production of irrigated crops at some time during the 4 years prior to the mapping date. Farmland of local importance is designated as land of importance to the local agricultural economy as determined by each county's board of supervisors and a local advisory committee. Areas of prime farmland and farmlands of Statewide and local importance that would be crossed by the B-Line, the Arrowhead Extension, and the IID Lateral are listed in Table 4.2.2-2 by milepost. In total, 71.7 acres of prime farmland and 47.6 acres of farmland of Statewide importance would be affected. No farmland of local importance would be affected by the pipeline facilities.

Aboveground Facilities

Modifications at the Ehrenberg Compressor Station, including the proposed pig receiver, would be completed within the existing fenceline and would not require additional land. Extra workspace, however, would be required outside of the fenceline to install a header pipe associated with the pig receiver. Use of this extra workspace would temporarily affect about 0.7 acre of soils. Modifications at the adjacent El Paso Meter Station would be completed within the fenceline and would not affect additional soil resources. The soils associated with these sites are silt loams, sandy loams, and sands that may exhibit a slight potential for erosion. The majority of these soils are classified as prime farmland. Construction of the Blythe-Arrowhead Meter Station and pig receiver would be completed within the existing fenceline of the SoCalGas Blythe Compressor Station and would not affect additional soil resources.

The pig launcher and receiver proposed for Rannells Trap would require an expansion of the existing site by 0.3 acre during construction and operation. Soils at this location consist of moderately level well-drained sands and loams. These soils are not designated as prime farmland or farmlands of Statewide or local importance. The pig launcher, taps, and crossover piping associated with the Arrowhead Extension would affect 1.0 acre of soils during construction and 0.8 acre of soils during operation. The soils at this location consist of sandy loams, silty clay loams, and silty clays that are designated as prime farmland and farmland of Statewide importance.

TABLE 4.2.2-2

Prime Farmland and Farmlands of Statewide and Local Importance Crossed by the North Baja Pipeline Expansion Project

Facility/Designation	La Paz County Mileposts	Riverside County Mileposts	Imperial County Mileposts	Total Acres [a]
B-Line				
Prime Farmland	0.0-0.2	0.8-5.4, 5.5-11.4		47.0
Farmland of Statewide Importance		2.2-5.4, 5.5-11.6		18.4
Farmland of Local Importance		0.3-0.8, 11.7-16.8, 17.0-19.8, 20.2-21.6, 22.1-22.2 [b,]	22.3-22.5, 23.4-23.5, 23.9-24.4, 24.5-25.0 [b,]	0.0
Arrowhead Extension				
Prime Farmland		0.0-2.1		16.1
Farmland of Statewide Importance		0.0-2.1		16.1
Farmland of Local Importance		-None-		0.0
IID Lateral				
Prime Farmland			27.9-28.2, 28.9-29.9, 30.1-30.5, 30.9-31.1, 32.3-33.0, 33.3-34.2, 34.9-35.1, 37.2-38.7, 39.1-39.3, 39.5-39.8, 40.5-41.1, 42.3-43.3	8.6
Farmland of Statewide Importance			28.2-28.9, 29.9-30.1, 30.5-30.9, 31.1-32.3, 33.0-33.3, 34.2-34.9, 35.1-37.2, 38.7-39.1, 39.3-39.5, 39.8-40.5, 41.1-42.3, 43.3-46.0	13.1
Farmland of Local Importance			9.3-9.7 [b, c], 12.9-13.9 [b, c]	0.0
Total Pipeline Facilities				
Prime Farmland				71.7
Farmland of Statewide Importance				47.6
Farmland of Local Importance				0.0

[a] Acreage includes pipeline construction right-of-way, extra workspaces, and access roads. Actual rights-of-way widths were used to calculate acres.

[b] Although mapped as "farmland of local importance," this area is not farmed land and is open desert.

[c] Located on the north side of Evan Hewes Highway.

Source: California Department of Conservation 1995a,b.

Modifications at the Ogilby Meter Station, including the proposed pig launcher and receiver, would affect about 0.2 acre of soils outside the existing fenced facility during construction and operation. The tap to the B-line and pig launcher associated with the IID Lateral would affect 0.2 acre of soils for the construction and operation of these facilities. The soils in the vicinity of the Ogilby Meter Station and the B-Line tap and pig launcher sites consist of desert pavement, clay loams, loams, sandy clay loams, and sandy loams. These soils may be limited by a slight potential for erosion. No prime farmland or farmlands of Statewide or local importance would be affected at these sites.

The El Centro Meter Station and pig receiver would affect about 2.5 acres of soils during construction and about 0.2 acre of soils during operation, all located within the existing fenceline of the IID El Centro Power Generating Station. The soils associated with these facility sites consist of fine silty

to coarse loamy soils. No prime farmland or farmlands of Statewide or local importance would be affected by these facilities.

Pipe Storage and Contractor Yards

All four proposed pipe storage and contractor yards have been previously disturbed for industrial/commercial activities and some have been graveled and/or paved.

4.2.3 General Impact and Mitigation

Pipeline construction activities such as clearing, grading, trench excavation, backfilling, and the movement of construction equipment along the right-of-way may affect soil resources. Clearing removes protective vegetative cover and exposes the soil to the effects of wind, rain, and runoff, which increases the potential for soil erosion and sedimentation of sensitive areas. Grading, spoil storage, and equipment traffic can compact soil, reducing porosity and percolation rates and increasing runoff potential. Construction activities can also affect soil fertility and facilitate the dispersal and establishment of weeds.

Erosion is a continuing, natural process that can be accelerated by human activities. Clearing, grading, and the movement of equipment on the right-of-way can accelerate the erosion process and, without adequate protection, result in discharges of sediment to wetlands and waterbodies and lower soil fertility. Factors that influence the rate of erosion include soil texture and structure, the length and percent of slope, vegetative cover, and rainfall or wind intensity. The most erosion-prone soils are generally bare or sparsely vegetated, non-cohesive, fine textured, and situated on moderate to steep slopes. Soils more resistant to erosion include those that are well vegetated, well structured with high percolation rates, and located on flat to nearly level terrain.

Construction equipment operating and traveling on the construction right-of-way, especially during wet periods and on poorly drained soils, can compact the soil. Soil compaction can also result from the storage of heavy spoil piles on certain types of soil for extended periods of time. Soil compaction destroys soil structure, reduces pore space and the moisture holding capacity of the soil, and increases runoff potential. If unmitigated, compaction results in soils with a reduced revegetation potential and an increased erosion hazard. The degree of compaction depends on the moisture content and texture of the soil. Wet soils with fine clay textures are the most susceptible to compaction. Compaction of fine-grained sediments such as clays is of particular concern in areas where clay soils are accompanied by a high water table because it may contribute to subsidence or the loss of surface elevation due to removal of subsurface support. Although clay soils occur in the Imperial Valley, the water table is generally low along the B-Line and IID Lateral routes, ranging from 9 to more than 400 feet below ground along the B-Line and 20 to 310 feet below ground along the IID Lateral route. Therefore, increases in compaction levels or the occurrence of subsidence that could damage the pipeline are not anticipated.

Construction activities such as grading, trenching, and backfilling can also cause mixing of soil horizons. Mixing of topsoil with subsoil, particularly in agricultural lands, dilutes the superior chemical and physical properties of the topsoil and lowers soil fertility and the ability of disturbed areas to revegetate successfully. Trenching of stony or shallow-depth-to-bedrock soils can bring stones or rock fragments to the surface. Soils with bedrock present at depths of 5 feet or less may require blasting, which also often results in excess rock being brought to the soil surface. Excess rocks on or near the soil surface could interfere with agricultural practices and hinder restoration of the right-of-way.

During the scoping process, a commentor expressed concern that the use of screened subsoil for padding material during pipeline installation could cause negative impacts on the soil's revegetation

potential. Screening subsoil for padding material would result in a backfill material with less soil fines, and the resultant coarser textured soil would likely have less nutrient and water holding capacity, which could affect the revegetation potential of the soil. However, screened subsoil is only one option for padding material; imported sand or sandbags could also be used. For the A-line, North Baja used a combination of screened subsoil and sandbags as pipe padding material. Although North Baja did not provide the specific locations where pipe padding was required or where each method was used during construction of the A-Line, the B-line would cross about 5.3 miles of soils with the potential for shallow bedrock or rocky soils to be encountered where it is likely that pipe padding would be necessary. Soils with these characteristics are not anticipated along the IID Lateral. The pipe padding methods proposed for the North Baja Pipeline Expansion Project are the same as those used during the A-Line construction, and the results of revegetation monitoring for the A-Line do not indicate a reduction in the recruitment of native species over the trenchline. Moreover, native seedling recruitment was in some locations higher over the disturbed right-of-way than in the control plots off of the right-of-way. Revegetation of the A-Line is discussed in Section 4.5.3 and in North Baja's CM&R Plan (see Appendix E).

Construction can also facilitate the establishment of noxious weeds where none or few existed. The clearing of existing perennial vegetation provides an opportunity for weed species to invade the right-of-way, and the movement of equipment along the right-of-way could transport weed seed and plant parts from one location to another (see Section 4.5.5). The seriousness of these effects would depend on the prevalence of weeds in the area of the pipeline route, the type of weed and its method of reproduction and dispersal, and the weed's effect on current or future land use.

No areas of contaminated soils are expected to be crossed by the Project; however, all of the soils crossed by the Project would be susceptible to contamination from spills or leaks of fuels, lubricants, and coolants from construction equipment. Although these impacts would typically be minor because of the low frequency and volumes of these occurrences, the introduction of these contaminants to soils can adversely affect productivity.

The impact of construction on soils can be effectively minimized through the use of erosion control and revegetation plans such as the FERC's Plan. To minimize impacts on soils associated with this Project, North Baja developed its CM&R Plan that includes the portions of the FERC's Plan that are relevant to the Project area and Project-specific measures developed in consultation with the BLM, the FWS, and the CDFG that address the special issues associated with construction and restoration in an arid environment. The CM&R Plan is included in Appendix E and consists of three parts as discussed below.

Desert Restoration Plan – This plan identifies the unique natural characteristics of the Project area and describes the procedures that were successful during construction of the A-Line that would be implemented during construction of the B-Line to preserve and restore habitat values affected by pipeline construction in the desert environment. The Desert Restoration Plan also summarizes the results of North Baja's post-construction revegetation and weed control monitoring that was conducted for the A-Line.

Upland Erosion and Sediment Control – This includes portions of the FERC's Plan that are relevant to the Project area and that are designed to minimize Project-related construction impacts on soils and minimize erosion.

Wetlands and Waterbodies – This includes portions of the FERC's Procedures that are relevant to the Project area and are designed to minimize Project-related disturbance to waterbodies and wetlands.

The Desert Restoration Plan and the Upland Erosion and Sediment Control sections of the CM&R Plan pertain to construction-related impacts on soils and provide mitigation measures that North Baja would implement to reduce these impacts during construction. These measures include:

- restricting the construction right-of-way width for the B-Line to 105 feet and further reducing the width of the right-of-way in areas with high concentrations of native trees;

- restricting the construction right-of-way width for the IID Lateral to 80 feet where the lateral would be parallel to existing powerlines and to 60 feet where the lateral would be installed between a powerline and a road or within or abutting the traveled portion of county roads;

- preserving the native seed bank by segregating topsoil to a depth of 2 to 8 inches in non-agricultural areas where grading would be conducted and redistributing material over the right-of-way during cleanup;

- preserving and redistributing cut vegetation over the right-of-way;

- restricting grading and crushing or cutting of vegetation where possible, leaving rootstock and minimizing soil disturbance;

- imprinting areas with a sheepsfoot or similar device to provide indentations to catch water/seed and anchor native plant material that has been respread over the right-of-way, thereby aiding in natural revegetation and erosion control;

- segregating and redistributing topsoil to its actual depth up to 2 feet in agricultural areas;

- maintaining water flow in crop irrigation systems, unless shutoff is coordinated with affected parties;

- testing for and alleviating compacted soils in agricultural and residential areas (details regarding North Baja's compaction testing plans are included in its CM&R Plan [see Appendix E] and discussed below);

- implementing procedures to prevent or minimize the spread of noxious weeds or other undesirable species by limiting disposal of plant materials to suitable areas and cleaning of clearing and grading equipment before entering native species areas; and

- placing intact salvaged plant materials or rock at specific locations where visual blocking would be employed to discourage use of the pipeline right-of-way by unauthorized vehicles.

The CM&R Plan modifies or omits several measures of the FERC's Plan because portions of the FERC's Plan are not applicable due to the arid climate crossed by the pipeline route. North Baja states that the arid climatic conditions in the Project area would limit the use or decrease the practical effectiveness of many traditional erosion control measures. For example, North Baja does not propose to install temporary erosion controls because of the level topography along most of the route and the stony soil where slopes are somewhat steeper along portions of the B-Line route east of SR 78. In the Project area, rainfall amounts average less than 5 inches annually. The infrequent rain events often occur in intense cloudbursts that result in flash flooding, which renders typical erosion controls (silt fence, hay bales, etc.) ineffective.

The Agency Staffs have reviewed North Baja's CM&R Plan and generally agree with the level of mitigation proposed and the appropriateness of the differences between the CM&R Plan and the FERC's Plan. Additionally, while the BLM, the FWS, and the CDFG were consulted during development of the

CM&R Plan for the A-Line, it is possible that these agencies may include additional construction or mitigation measures when issuing permits and agreements for the proposed Project, including the CDFG's SAA (see Section 4.3.3.4). In accordance with its CM&R Plan, North Baja would prepare and submit an updated CM&R Plan before construction if necessary to incorporate any additional requirements of Federal, State, and local permits.

Although revegetation of the disturbed areas in native desert habitats would be slow, the rate of revegetation would be primarily attributable to the arid climate. Artificial revegetation is not practical on a large scale due to the extremely arid conditions. If North Baja implements its CM&R Plan, the Project would not result in significantly increased erosion rates and a reduction of soil productivity by compaction or soil mixing to a level that would prevent successful rehabilitation and eventual re-establishment of vegetative cover to the recommended or preconstruction composition and density. Further, if the mitigation measures in the CM&R Plan that pertain to agricultural areas are implemented, the Project would not result in a significant reduction in agricultural productivity for longer than 3 years as a result of soil mixing, structural damage, or compaction.

The CM&R Plan includes the measures of the FERC's Plan to mitigate potential soil compaction in residential and agricultural areas, and also includes a measure to conduct compaction testing and alleviate compaction along the IID Lateral if fine-textured soils, as identified by the EI or the BLM, are encountered. Additional measures to mitigate construction-related impacts on soils are included in North Baja's Dust Control Plan, which is described in Section 4.12.4 and provided in Appendix L. Fugitive dust disturbed by construction is a visible indication of soil loss through wind erosion. The Dust Control Plan outlines measures that would be implemented to control fugitive dust during construction.

North Baja's SPCC Plan specifies cleanup procedures to minimize the potential for soil contamination from spills or leaks of fuels, lubricants, and coolants used during construction (see Appendix F). Implementation of North Baja's SPCC Plan would effectively reduce the potential impact on soils from spills of the hazardous materials used during construction and would not significantly increase the exposure of human or ecological receptors to potentially hazardous levels of chemicals.

North Baja would employ full-time EIs to ensure compliance with the CM&R Plan, the SPCC Plan, the Dust Control Plan, and other Project-specific plans and specifications during construction and restoration. At least two EIs would be assigned to each construction spread. The EIs would have peer status with other activity inspectors and would have the authority to stop and order corrective actions for activities that violate the environmental conditions of the FERC Certificate or other authorizations. Implementation of North Baja's proposed mitigation measures would reduce impacts on soil resources to less than significant levels.

4.2.4 Site-specific Impact and Mitigation

Pipeline Facilities

As indicated in Table 4.2.2-1, about 7 percent of the soils that would be crossed by the B-Line may exhibit shallow depth to bedrock. Based on North Baja's experience during construction of the A-line, shallow bedrock would be a concern primarily in the vicinity of MP 29.5 and would likely require blasting in order to excavate the trench through this area. Specific construction procedures would be used to minimize impact on soils. Excess rock would be removed from the upper 12 inches of soil to the extent practicable in cropland, hayfields, pastures, residential areas, and other areas at the landowner's request. Excess rock would not be windrowed along the right-of-way unless written approval was obtained from landowners or land management agencies. All blasting would be done according to North Baja's construction specifications for blasting (see Sections 2.3.2 and 4.1.2, and Appendix I). North

Baja's blasting specifications include detailed requirements for the use, storage, transportation, and handling of explosives; therefore, the Project would not significantly increase the exposure of human or ecological receptors to explosives.

Other soil limitations that would be encountered during construction of the Project would include 494.4 acres of soils with high water erosion potential. The majority of these soils would occur along the B-Line (454.4 acres), with 3.6 acres affected along the Arrowhead Extension, and 36.4 acres affected along the IID Lateral. In addition, a total of 355.2 acres of soils along the B-Line (162.9 acres), the Arrowhead Extension (0.6 acre), and the IID Lateral (191.7 acres) routes exhibit high wind erosion potential. As discussed in Section 4.2.3, implementation of the mitigation measures outlined in North Baja's CM&R Plan and Dust Control Plan would satisfactorily minimize and mitigate construction-related effects on these soils to less than significant levels.

Comments were received during the scoping process that reported increased erosion along the restored A-Line right-of-way and requested that culverts be installed where dry washes cross Stallard Road. A review of the affected areas indicates that the specific erosion events were not related to the pipeline right-of-way but rather were the result of high intensity runoff in wash areas due to storm-related events. The installation of culverts where washes are crossed by Stallard Road would be an issue to be addressed with Riverside County, which is the agency that has jurisdiction over the road. However, the BLM recently identified various degrees of erosion along the A-line in steeply sloped areas south of Stallard Road. North Baja would work with the BLM to correct these areas.

The IID Lateral would cross the ISDRA between MPs 0.0 and 7.0. The sand dunes consist of loose wind-blown sand. North Baja would cross portions of this area in association with the HDDs of the two All-American Canal crossings; however, the portion of this area between the two canals would be crossed using conventional overland construction methods. Crossing this area would require a wider trench to be excavated because trench walls in unconsolidated, unstable soils tend to collapse. Despite the need for a wider trench, North Baja anticipates that it would be able to construct through this area within its proposed 80-foot-wide construction right-of-way. Therefore, the presence of unconsolidated and unstable soils would not result in the need for a significantly wider construction right-of-way.

The loose sandy soil conditions in this area could increase the potential for pipe exposure. North Baja proposes to bury the IID Lateral 6 feet deep between MPs 2.7 and 5.7, which includes the area most susceptible to blowing/shifting sands. This added depth of cover would reduce the potential for pipe exposure; therefore, the presence of unconsolidated and unstable soils would not result in an increased potential for pipe exposure during operations.

Because a significantly wider construction right-of-way would not be required and North Baja's proposal to increase the pipeline depth would reduce the potential for pipeline exposure, impacts related to the unconsolidated and unstable soils crossed would be less than significant.

A significant impact on irrigation systems is not anticipated. The majority of irrigation drains and canals would not be affected by construction because they would be crossed either by boring underneath the culverts along 18th Avenue or by installing the pipeline between the drain culvert and the road. Additionally, North Baja would contact landowners in the Palo Verde and Imperial Valleys regarding the location of other irrigation systems that could be affected during construction and would maintain water flow in these systems or coordinate disruption of irrigation flow or any shutoff times with the affected landowners. However, Rannells Drain along the B-Line and two unnamed canals along the Arrowhead Extension would be crossed using the open-cut method (see Section 2.3.2). The impact on Rannells Drain and the two unnamed canals would be temporary and mitigated by restoring the banks and bed to their original configurations. Because of the steepness of the banks at the Rannells Drain crossing,

erosion control fabric would be used for bank stabilization purposes upon completion of pipeline construction at this crossing. Implementation of these mitigation measures would reduce impacts on irrigation systems, Rannells Drain, and the two unnamed canals to less than significant levels.

Between MPs 0.0 and 0.2 and MPs 0.8 and 11.6, the B-Line would cross soils designated as prime farmland and farmland of Statewide importance. In total, 65.4 acres of designated farmland would be temporarily affected along the B-Line. No permanent impacts on prime farmland or farmlands of Statewide or local importance would occur in association with the construction and operation of facilities associated with the B-Line.

The Arrowhead Extension would cross about 1.1 miles of agricultural land between MPs 1.0 and 2.1 that would result in temporary impacts on about 16.1 acres of soils designated as prime farmland and farmland of Statewide importance. Construction of the pig launcher, taps, and crossover piping would permanently affect 0.8 acre of prime farmland and farmland of Statewide importance. The Blythe-Arrowhead Meter Station and pig receiver would be within the fenceline of the existing SoCalGas Blythe Compressor Station site and would not affect farmland soils. This loss would be much less than 0.1 percent of the agricultural lands in the Palo Verde Valley and would be less than significant.

Soils designated as prime farmland and farmland of Statewide importance would be crossed at numerous locations along the IID Lateral between MPs 27.9 and 46.0. In total, about 21.7 acres of designated farmland would be temporarily affected along the IID Lateral. No permanent impacts on prime farmland or farmlands of Statewide or local importance would occur in association with the construction and operation of facilities associated with the IID Lateral.

North Baja would avoid significant impact on prime farmland or farmlands of Statewide or local importance by locating the B-Line, portions of the Arrowhead Extension, and the IID Lateral facilities in road shoulders adjacent to agricultural areas. Impacts that would occur on these soils and other active farmlands would be mitigated by segregating 1 to 2 feet of topsoil before installation of the pipeline and reapplying topsoil over the surface of the right-of-way during restoration as outlined in the CM&R Plan (see Appendix E). In addition, North Baja would implement a post-construction crop monitoring program to maintain the level of production of the affected soils. The program would evaluate crop productivity and success for a period of at least 2 years following construction. North Baja would prepare activity reports during this period documenting any problems identified by North Baja or the landowner and describing corrective actions taken to remedy these problems. These reports would be submitted to the FERC and the CSLC on a quarterly basis, as stipulated in the CM&R Plan. The FERC and CSLC staffs would also monitor the right-of-way after construction. If after 2 years it is determined that cropland crossed by the pipeline has not been restored successfully, North Baja would implement additional restoration measures. Implementation of North Baja's CM&R Plan would reduce impacts on agricultural land to less than significant levels.

For the portions of the Project that cross BLM lands, the BLM would need to assess potential impacts on rangeland health resulting from construction of the Project. One of the attributes included in the rangeland health assessment is soil/site stability (i.e., the capacity of the site to limit redistribution and loss of soil resources by wind and water [Pellant et al. 2005]). As discussed above, soil disturbance during pipeline construction could expose the soils to the erosional forces of wind and water thus affecting soil stability. Implementation of erosion control measures and the revegetation plan contained in North Baja's CM&R Plan (see Section 4.2.3 and Appendix E) would effectively mitigate impacts on soil and avoid impacts on rangeland health.

4.2.5 No Project Alternative

Under the No Project Alternative, the FERC would deny North Baja's application for a Certificate and a Presidential Permit amendment, the CSLC would deny North Baja's application for an amendment to its right-of-way lease across California's Sovereign and School Lands, and the BLM would deny North Baja's application to amend its existing Right-of-Way Grant and obtain a Temporary Use Permit for the portion of the Project on Federal lands. The No Project Alternative means that the Project would not go forward and the Project-related facilities would not be installed. Accordingly, none of the potential impacts on soils identified for the construction and operation of the proposed Project would occur.

Because the proposed Project is privately funded, it is unknown whether North Baja would fund another energy project in California. However, should the No Project Alternative be selected, the energy needs identified in Section 1.1 would likely be addressed through other means, such as through other LNG or natural gas-related pipeline projects. Such projects may result in potential environmental impacts of the nature and magnitude of the proposed Project as well as impacts particular to their respective configurations and operations; however, these impacts cannot be predicted with any certainty at this time.

4.3 WATER RESOURCES

4.3.1 Significance Criteria

An adverse impact on groundwater would be considered significant and would require mitigation if Project construction or operation would:

- alter the flow of groundwater to local springs or wetland areas;
- interrupt or degrade groundwater used for private or municipal purposes; or
- result in either short- or long-term violation of Federal, tribal, or State agency numerical water quality standards or water quality objectives.

An adverse impact on surface waters would be considered significant and would require mitigation if Project construction or operation would:

- result in either short- or long-term violation of Federal, tribal, or State agency numerical water quality standards or water quality objectives;
- alter channel bed armoring, bank composition, or stream hydraulic characteristics such that it results in short- or long-term erosion or so that the banks of a waterway must be armored to reduce short- or long-term erosion;
- cause the resuspension of contaminated bottom sediments that would degrade the quality of water downstream in violation of Federal, tribal, or State agency water quality standards;
- result in increased sedimentation that adversely affects the operation of irrigation water control structures, gates, or valves or the quality of municipal water supply reservoirs;
- reduce streamflow quantity where such a flow change would significantly damage either beneficial uses or aquatic life;
- increase the potential for flooding outside the stream channel;
- place permanent structures within the 100-year floodplain that would be damaged by flooding;
- increase soil or wind erosion rates or sedimentation such that degradation of water quality standards would result; or
- degrade the integrity of structures, such as (bridges, pipelines, and utilities) due to erosion and improper conveyance of stormwater during construction and operation.

4.3.2 Groundwater Resources

4.3.2.1 Existing Groundwater Resources

Groundwater in the vicinity of the North Baja Pipeline Expansion Project is primarily derived from unconsolidated to poorly consolidated alluvial sediments consisting of gravel, silt, sand, and clay

associated with a complex system of basin-fill deposits (FERC and CSLC 2002, Planert and Williams 1995, Robson and Banta 1995). Many desert basins are characterized by broad alluvial fans and plains sloping to playas, creating closed drainage basins that are usually dry. Hydrologic characteristics within these desert basins can differ considerably from basin to basin and within basins. The majority of the groundwater underlying the proposed facilities is derived from imported water from the Colorado River that is used for irrigation. Other local uses of groundwater in the Project area include industrial and commercial processes and municipal and domestic water supplies. Small amounts of groundwater may also be found in the underlying bedrock where it collects in fractures or weathered areas, but this groundwater is not considered a primary source.

No EPA-designated sole-source aquifers would be crossed by the proposed Project (EPA 2005, Federal Emergency Management Agency [FEMA] 2005). The nearest sole-source aquifer is the Ocotillo-Coyote Aquifer, which is approximately 42 miles west of the terminus of the IID Lateral. No known municipal/public water supply sources, wellhead protection areas, or springs would be crossed (Langer et al. 1984).

B-Line and Arrowhead Extension

The Colorado River Aquifer underlies the majority of the B-Line, the Arrowhead Extension, and associated aboveground facilities, including all of those portions within La Paz County, Arizona and Riverside County, California, and the northern portion of Imperial County, California. The B-Line would cross a watershed described as the Amos Ogilby and Imperial Hydrological Units in the southern portion of Imperial County from about MP 49.5 south to the All-American Canal. Groundwater recharge in these watersheds occurs within Colorado River floodplain alluvial deposits and is hydraulically connected to the river (FERC and CSLC 2002). Other minor sources of groundwater recharge include groundwater inflow from adjacent areas, infiltration of precipitation that falls to the ground surface, infiltration from irrigation ditches and canals, and local runoff from surrounding mountains.

Groundwater depth in the vicinity of the B-Line and the Arrowhead Extension is variable depending on the proximity of the area to the Colorado River or on drainage from irrigated lands (FERC and CSLC 2002). Depths to groundwater were derived from a combination of databases prepared by the USGS (2005) and a series of maps prepared by Langer et al. (1984). Groundwater levels ranging from 9 to 23 feet below the surface have been recorded in the vicinity of the B-Line in the Palo Verde Valley (approximately MPs 0.0 to 12.0), which is close to the Colorado River. Groundwater in the Palo Verde Valley is artificially augmented by irrigation water diverted from the Colorado River. Further south along the B-Line, depth to groundwater tends to increase. Groundwater levels have been recorded at depths greater than 130 feet beneath the Palo Verde Mesa (approximately MPs 12.7 to 20.5), and depths of more than 400 feet below the land surface have been recorded near the Cargo Muchacho Mountains (approximately MP 66.8) and surrounding areas. Even further south along the B-Line, depths to groundwater gradually decrease and have been recorded as shallow as approximately 35 feet below the ground surface in the vicinity of the All-American Canal near MP 79.8 (USGS 2000).

Groundwater quality is influenced by local geology, the effects of agricultural irrigation, and the chemical characteristics of the Colorado River (FERC and CSLC 2002). High concentrations of total dissolved solids ranging from 400 to 3,000 milligrams per liter (mg/l) cause the chemical quality of groundwater in the areas affected by the B-Line and the Arrowhead Extension facilities to be relatively poor (EPA 2006).

IID Lateral

The IID Lateral would cross a terminal sink basin called the Salton Trough, which is a topographic and structural trough that extends from southeastern California into Mexico (Planert and Williams 1995). The Salton Trough is approximately 130 miles long and 70 miles wide and is a landward extension of the depression that is partially filled by the Gulf of California. The Salton Trough is further divided in California into two parts by the Salton Sea: the Imperial Valley to the south and the Coachella Valley to the north. The IID Lateral would pass entirely through the southern Imperial Valley, which is the largest area of desert irrigation in the United States.

The most important source of groundwater recharge to the Imperial Valley is the Colorado River, with minor recharge resulting from groundwater inflow from adjacent areas (especially canal seepage), infiltration of runoff from surrounding mountains, and local runoff (Planert and Williams 1995). The salinity of the Colorado River is the most important water quality issue in the basin, with concentrations as high as 900 milligrams per liter (mg/l); major ionic constituents are calcium, sulfate, and chloride (USGS 2005). Groundwater within the Imperial Valley generally flows north toward the Salton Sea. Depths to groundwater range between 20 and 310 feet below the ground surface and generally tend to decrease moving from east to west (USGS 2005, California Department of Water Resources [CDWR] 2005).

4.3.2.2 General Impact and Mitigation

Although activities associated with construction of the Project could affect groundwater resources, most potential impacts on groundwater resources would be avoided or minimized by the use of both standard and specialized construction techniques as described in Section 2.3. For the majority of the Project, groundwater levels are generally well below the land surface that would be affected by construction activities. However, shallow aquifers underlying certain construction areas (e.g., the Palo Verde Valley, portions of the route in the Cibola NWR, and the Imperial Valley) could experience minor impacts from clearing, grading, trenching, dewatering, soil mixing, and compaction that could temporarily alter overland flow and groundwater recharge. Near-surface soil mixing and compaction caused by heavy construction vehicles could also reduce the soil's ability to absorb water. These impacts would be temporary and minor and would not significantly affect groundwater resources or groundwater quality. In accordance with North Baja's CM&R Plan, vegetation would be cleared only where necessary. After completion of construction, North Baja would restore the ground surface as closely as practicable to original contours and allow vegetation to regenerate to provide restoration of preconstruction overland flow and recharge patterns. Routine operation and maintenance of the Project facilities would not result in disturbance or contamination of groundwater resources.

Unconfined aquifers and shallow groundwater areas could be vulnerable to contamination caused by inadvertent surface spills of petroleum or hazardous materials used during construction. Accidental spills and leaks of hazardous materials associated with equipment trailers; the refueling or maintenance of vehicles; and the storage of fuel, oil, and other fluids pose the greatest risk to groundwater resources. If not cleaned up, contaminated soils would continue to leach and add pollutants to groundwater long after a spill has occurred. Impacts associated with spills or leaks of hazardous liquids could be avoided or minimized by restricting the location of refueling and storage facilities and by requiring cleanup in the event of a spill or leak.

North Baja's SPCC Plan addresses preventive and mitigative measures that would be used to avoid or minimize the potential impact of petroleum or hazardous material spills during pipeline construction. Some pertinent measures in North Baja's SPCC Plan include:

- proper storage and handling of containers and tanks, including storage of containers with hazardous liquids in secondary containment structures;
- restricting liquid transfer, vehicle and equipment washing, and refueling within 100 feet of wetlands and waterbodies, 200 feet of water supply wells, and 400 feet of municipal or community water wells or protected wellhead or watershed areas;
- training of all employees on the contents of the SPCC Plan;
- maintaining emergency spill kits in all service vehicles;
- periodic inspection of vehicles and equipment for leaks;
- established release notification and emergency response procedures; and
- proper disposal of contaminated materials and soils and replacement of excavated contaminated soil with clean soil.

Implementation of North Baja's CM&R and SPCC Plans would reduce the potential for construction or operation of the Project to result in either short- or long-term violation of Federal, tribal, or State agency numerical water quality standards or water quality objectives to less than significant levels.

In locations where groundwater is close to the land surface (6 to 8 feet deep), the trench excavation could intersect the water table. In these areas, trench dewatering may be required. The potential effect on users of the aquifer would depend on the rate and duration of pumping and the location of the activity, but is expected to be minor. Pipeline construction activities within a particular location are typically completed within several days; consequently, potential impacts would be localized and temporary and water levels would be quickly re-established when backfilling is complete. However, alteration of the natural soil strata could potentially result in new groundwater migration pathways away from surface waterbodies. Implementation of North Baja's CM&R Plan, which requires the use of trench breakers or installation of trench plugs at the edges of waterbodies, would eliminate these potential impacts; therefore, the potential for the Project to alter the flow of groundwater to local springs or wetland areas would be less than significant.

During construction of the B-Line, the Arrowhead Extension, and the IID Lateral, substantial amounts of groundwater may be encountered in the vicinity of the Colorado River and near canal crossings. Additionally, substantial amounts of groundwater may be encountered along the IID Lateral in the agricultural areas from MPs 28 to 46 near canal and drain crossings. To control the influx of groundwater into bore pits, the use of well points in addition to standard sump pump dewatering may be necessary. The water from these dewatering operations would be discharged to dewatering structures and/or otherwise filtered and discharged into field drains or canals. North Baja would obtain the necessary permits to perform these operations. Minor fluctuations in local groundwater levels may occur, but would be temporary and minor.

Although no areas of known groundwater contamination would be affected by construction of the Project facilities, unanticipated, pre-existing contaminated groundwater could be encountered during construction. In the event contaminated groundwater or contaminated soils are encountered as evidenced by refuse and/or other debris in the trench, discoloration, odor, or other signs at these locations or other locations along the pipeline routes, additional observations for the presence of a chemical sheen, free product, and chemical odor would be made and recorded before any further construction activity. Field

observations would be conducted to determine the nature of the contamination, appropriate disposal/treatment options, and the need for sampling. If contaminated groundwater and/or soils are encountered, North Baja would stop work and consult with the appropriate agencies, including the CRWQCB and the Riverside and Imperial Counties Departments of Health on a plan to proceed. The plan would include provisions for characterizing the contaminants, appropriate health and safety measures for workers, and proper discharge of the groundwater. North Baja would notify the appropriate agencies of any discoveries of pre-existing contamination and would perform evaluations on the amount and composition of the contamination. Once the evaluations are completed, North Baja would coordinate with the appropriate agencies to determine appropriate actions and disposal of affected materials.

4.3.2.3 Water Supply Wells

Before construction, North Baja would conduct a field survey to identify public and private water supply wells within 150 feet of the proposed construction work area. This is the distance specified in Title 18 CFR Part 380.12(d)(9). However, a preliminary identification of water supply wells in the vicinity of the Project was conducted by contacting State agency staff and reviewing well location maps and databases at the CDWR and the USGS. Based on this review, 10 water supply wells would be within 150 feet of the centerline of the pipeline facilities (USGS 2005, CDWR 2005). All of these wells would be along the B-Line. Nine of the 10 wells have no records of groundwater data after 2001 and are likely non-operational wells. The exception is well ID #007S023E14C019S at MP 2.5. Table 4.3.2-1 lists the wells within 150 feet of the B-Line by milepost and depicts the distance from the centerline and depth to groundwater.

TABLE 4.3.2-1

Water Wells Within 150 Feet of the Centerline of the Pipeline Facilities Associated with the North Baja Pipeline Expansion Project

Facility/Well ID# [a]	Milepost	Distance from Centerline (feet) [b]	Groundwater Depth (feet)
B-Line			
007S023E14C019S	2.5	74	12.4
007S023E15A001S	2.6	116	ND [c]
007S023E08R001S	4.5	131	ND
007S023E17D002S	5.4	11	ND
007S022E12R001S	6.5	17	ND
007S022E14A001S	7.4	23	ND
007S022E10R001S	8.5	147	ND
007S022E15D001S	9.4	7	ND
007S022E17C001S	11.0	92	ND
007S022E18A001S	11.6	27	ND
Arrowhead Extension		-None-	
IID Lateral		-None-	

[a] Uses township-range-section nomenclature based on the San Bernardino Base and Meridian.

[b] Accuracy of global positioning system data may be as high as +/- 30 meters depending on satellite coverage and geographic information system resolution.

[c] ND = No current groundwater data available for the period 2001 through 2006.

During construction of the A-Line, only one well was identified within 150 feet of the proposed construction work area. This well, probably inactive based on lack of groundwater data since 2001, is north of 18th Avenue near MP 7.9 and is assumed to be associated with an existing residence.

Potential impacts on wells within 150 feet of the construction work area could include: localized decreases in groundwater recharge rates, changes to overland water flow, contamination due to hazardous materials spills, decreased well yields, decreased water quality (such as an increase in turbidity or odor in the water), interference with well mechanics, or complete disruption of the well. These impacts could result from trenching, equipment traffic, or blasting. Many variables such as well depth, well age, surficial geologic material type, and aquifer characteristics would factor into whether a well would actually be impacted by the Project. The primary variable, however, would be the distance between the construction activity and the well. Wells further than 150 feet from the construction work area would be unaffected by the Project under most conditions.

With the landowner's permission, North Baja would test water wells within 150 feet of the construction work area before construction to determine baseline flow conditions as a means of determining any potential construction-related impacts. Where impacts are reported by landowners, North Baja would conduct post-construction water well tests. If it is determined that construction activities have impaired a well's water quality or yield, North Baja would either provide bottled water for drinking and arrange for an alternate source of water (such as a water truck) for other household uses, temporarily relocate the landowner until the water supply is restored, or compensate the landowner for losses. If water quality or yield is permanently impaired as a result of construction activities, North Baja would arrange for a new well to be drilled or compensate the landowner.

The potential for contaminating wells due to spills of petroleum or hazardous materials is generally low because of the relatively small volume of such materials present during construction. Refueling and the storage of hazardous substances would be prohibited within 200 feet of a private well and 400 feet of a community or municipal well. The potential for impacts due to spills would be further reduced by implementation of North Baja's SPCC Plan as described in Section 4.3.2.2.

As discussed previously, blasting is only anticipated near MP 29.5. No water wells have been identified within 0.5 mile of this location. Should additional water wells be identified in the vicinity of a location requiring blasting, North Baja's use of proper blasting techniques, which would fracture bedrock only to the point necessary for removal, would limit the effect of the blast to a local area above the aquifer in the proximity of the trenchline (see Appendix I). Consequently, it is unlikely groundwater quality would be affected.

In summary, no municipal uses of groundwater were identified within the vicinity of the North Baja Pipeline Expansion Project, and only 10 private wells have been identified within 150 feet of the proposed facilities. Because North Baja would implement the measures contained in its CM&R and SPCC Plans and would identify and monitor any water wells within 150 feet of the construction work area, the potential for the Project to interrupt or degrade groundwater used for private or municipal purposes is less than significant.

4.3.3 Surface Water Resources

4.3.3.1 Existing Surface Water Resources

Pipeline Facilities

The North Baja Pipeline Expansion Project would cross two watersheds: the Imperial Reservoir Watershed and the Salton Sea Watershed. The B-Line would cross the Imperial Reservoir Watershed between MPs 0.0 and 49.5 and the Salton Sea Watershed between MPs 49.5 and 79.8, the Arrowhead Extension would lie entirely within the Imperial Reservoir Watershed, and the IID Lateral would lie entirely within the Salton Sea Watershed. Both watersheds have been classified as Category I watersheds

in California's Unified Watershed Assessment (NRCS 2005), which is part of the Clean Water Action Plan. Category I watersheds are high priority candidates for restoration activities to improve impaired water quality or other impaired natural resource goals, with an emphasis on aquatic systems.

Surface waters are classified by the States by the identification of beneficial uses of surface waters. This identification is based strictly on documentation of the existence of those uses, which can also include potential future and intermittent uses. Such uses are protected by the States through the development of water quality objectives for those uses. The beneficial uses of surface waters in the Project area include agricultural irrigation; municipal and domestic water supply; industrial service supply; groundwater recharge; contact (e.g., swimming, wading, waterskiing) and non-contact (e.g., boating, beachcombing, hiking) recreation; freshwater fish habitat; wildlife habitat; and preservation of rare, threatened, or endangered species (CRWQCB 1994, NRCS 2005). The water quality of the surface waters in the Project area is generally poor; these waters are highly saline or alkaline because of the predominance of sedimentary rocks, high evaporation rates, and low precipitation. The primary purpose of the agricultural drains in the Project area is for the collection, transport, and storage of drainage waters from irrigated cropland to maintain adequate soil salinity balance for agriculture (CRWQCB 1994).

All of the waterbodies within the Imperial Reservoir and Salton Sea Watersheds, including agricultural canals and drains, are listed by the California State Water Resources Control Board (CSWRCB) as impaired (California Environmental Protection Agency [CEPA] 2005). This impairment is due to elevated pesticide and selenium levels in fish tissues and toxic bioassay results that identified high pesticide levels in other aquatic organisms. Agricultural runoff from irrigation practices has been identified as the primary source of impairment (CEPA 2005), and contaminated sediments may exist in agricultural canals and drains from extensive pesticide use on irrigated croplands (CRWQCB 1999).

Surface waters in the Project area consist of perennial rivers, man-made irrigation canals and ditches/drains, and desert dry washes. Occasional high-intensity rainfalls contribute to the highly turbid flows that are observed in streams and rivers in the region. Dry washes flow primarily during these precipitation events. Flash floods can be caused by intense, short periods of rainfall and can move large loads of sediment, gravel, and larger debris over wide areas of drainage canals and desert washes.

A total of 2 perennial waterbodies, 73 irrigation canals and drains, and 265 dry desert washes would be crossed by the proposed pipeline facilities. Of these, the B-Line would cross 1 perennial waterbody (the Colorado River) and 31 irrigation canals and drains (including the All-American Canal). All 265 dry washes that would be crossed by the Project occur along the B-Line. The Arrowhead Extension would cross the C-05 Canal and two unnamed canals. The IID Lateral would cross 1 perennial waterbody (the Alamo River) and 39 irrigation canals and drains, including the All-American Canal (two crossings) and the East Highline Canal. Table 4.3.3-1 lists the perennial waterbodies and irrigation canals and drains by milepost, type, crossing width, fishery classification, and proposed crossing method. The dry washes that would be crossed by the B-Line are listed in Appendix M.

No potable water intake sources are within 3 miles downstream of the proposed waterbody crossings (Taylor 2005). However, the East Highline Canal delivers municipal water to the City of Holtville via an intake on Pear Canal (Mendez 2005), which is approximately 6 miles from where the IID Lateral would cross the East Highline Canal.

Neither of the two perennial rivers (the Colorado River and the Alamo River) that would be crossed by the Project are listed on the Nationwide Rivers Inventory or recognized as State-designated scenic rivers (NRCS 2005).

TABLE 4.3.3-1

Perennial Waterbodies, Canals, and Drains Crossed by the North Baja Pipeline Expansion Project

Facility/ Approximate Milepost	Waterbody	Type	Crossing Width (feet)	Fishery Type	Proposed Crossing Method
B-Line					
0.2	Colorado River	Perennial	790	Warmwater	HDD [a]
1.3	D-10-13-42E	Delivery Canal	9	NC [b]	Dry [c]
1.7	D-10-13-45E	Delivery Canal	15	NC	Dry
1.9	D-10-13-47E	Delivery Canal	15	NC	Dry
2.2	D-10-13-49E	Delivery Canal	15	NC	Dry
2.3	D-10-13 (F)	Canal	40	NC	Dry
2.7	D-10-11-2N	Delivery Canal	2	NC	Dry
2.9	D-10-Siphon 48	Canal	15	NC	Dry
3.2	East Side Drain	Drain	2	NC	Dry
3.4	Goodman Drain	Drain	50	NC	Dry
3.6	D-Siphon-89	Canal	40	NC	Dry
3.9	Private	Canal	2	NC	Dry
4.4	D-19	Canal	15	NC	Dry
4.7	D-19-4N	Delivery Canal	2	NC	Dry
5.2	Lovekin Drain	Drain	30	NC	Dry
5.4	Private	Canal	2	NC	Dry
5.9	C-Siphon-56	Canal	42	NC	Dry
6.9	Central Drain	Drain	35	NC	Dry
7.9	C-05 Canal	Canal	17	NC	Dry
8.2	Private	Canal	9	NC	Dry
8.9	West Side Drain	Drain	40	NC	Dry
9.5	C-03 Canal	Canal	35	NC	Dry
9.9	C-03-64N	Delivery Canal	35	NC	Dry
10.3	C-03-16-3N Canal	Delivery Canal	40	NC	Dry
10.5	C-03-16 Canal	Canal	2	NC	Dry
10.7	C-03-16-6S	Delivery Canal	15	NC	Dry
10.9	C-03-16-1	Canal Heading	6	NC	Dry
10.9	C-03-16-8W	Delivery Canal	6	NC	Dry
11.2	Private	Canal	15	NC	Dry
11.4	Rannells Drain	Drain	60	NC	Open Cut
11.4	Private West Side of Drain	Canal	15	NC	Dry
79.8	All-American Canal	Canal	200	NC	HDD
Arrowhead Extension					
0.5	Unnamed Canal	Canal	10	NC	Open Cut
1.5	Unnamed Canal	Canal	10	NC	Open Cut
1.5	C-05 Canal	Canal	53	NC	Dry
IID Lateral					
2.4	All-American Canal	Canal	200	NC	HDD
8.1	All-American Canal	Canal	200	NC	HDD
12.5	All-American Canal Lateral 7	Canal	17	NC	Dry
27.5	East Highline	Canal	190	NC	HDD
28.4	Warren 2E	Drain	4	NC	Dry
28.5	Lateral 7 / Gate 183	Canal	3	NC	Dry
29.1	Lateral 7 / Gate 183A	Canal	2	NC	Dry
29.4	Warren 2C	Drain	3	NC	Dry

TABLE 4.3.3-1 (cont'd)

Perennial Waterbodies, Canals, and Drains Crossed by the North Baja Pipeline Expansion Project

Facility/ Approximate Milepost	Waterbody	Type	Crossing Width (feet)	Fishery Type	Proposed Crossing Method
31.4	Warren 1	Drain	4	NC	Dry
32.3	Alamo	Canal	7	NC	Dry
32.3	Alamo River	Perennial	52	NC	Dry
33.6	Barbara Worth	Drain	3	NC	Dry
33.9	Lateral 12	Canal	6	NC	Dry
34.5	Ash Main	Canal	6	NC	Dry
34.9	Ash Lateral 30	Canal	6	NC	Dry
35.9	Ash Lateral 39	Canal	4	NC	Dry
36.4	Ash Lateral 39 (30A)	Canal	6	NC	Dry
36.9	Ash Lateral 34	Canal	6	NC	Dry
37.2	South Central	Drain	6	NC	Dry
38.0	Ash Lateral 33	Canal	6	NC	Dry
38.2	Ash Lateral 36/Gate 151	Canal	3	NC	Dry
38.4	Central 2A	Drain	3	NC	Dry
38.4	Ash Lateral 36/Gate 151C	Canal	3	NC	Dry
38.9	Central 2C	Drain	4	NC	Dry
38.9	Ash Lateral 15	Canal	6	NC	Dry
38.9	Unnamed	Drain	8	NC	Dry
39.2	Unnamed	Drain	7	NC	Dry
39.2	Ash Lateral 37	Canal	8	NC	Dry
39.4	Unnamed	Drain	12	NC	Dry
39.4	Ash 157	Drain	14	NC	Dry
40.3	Acacia	Drain	4	NC	Dry
40.4	Acacia	Canal	7	NC	Dry
41.9	Acacia Lateral 6A	Canal	3	NC	Dry
42.2	Unnamed	Drain	4	NC	Dry
42.5	Acacia Lateral 8	Canal	3	NC	Dry
43.4	Acacia 6A	Drain	6	NC	Dry
44.1	Alder Lateral 7	Canal	17	NC	Dry
44.6	Alder	Canal	11	NC	Dry
44.8	Central 3	Drain	6	NC	Dry
45.6	Dogwood	Canal	12	NC	Dry

[a] HDD = Horizontal directional drill.

[b] NC = No fisheries classification.

[c] Dry crossings would include boring beneath the existing canals and drains that are enclosed inside drain culverts or installing the pipeline between the drain culvert and the road.

The North Baja Pipeline Expansion Project would cross floodplains at numerous locations along the B-Line and at a single location along the IID Lateral. No floodplains would be crossed by the Arrowhead Extension. The B-Line would cross 4.3 miles of FEMA-designated floodplains at 27 separate locations scattered between MPs 24.0 and 79.6. Seventeen of these locations coincide with dry wash crossings. The floodplain crossings vary in length from 0.02 mile to 0.77 mile with the majority of floodplain crossings less than 0.25 mile long. The IID Lateral would cross one FEMA-designated 100-year flood hazard area at the Alamo River crossing (ESRI & FEMA 2005, FEMA 2005). The only aboveground facility that would be in a floodplain is valve #7 on the B-Line.

Aboveground Facilities

There are no waterbodies at any of the proposed aboveground facility sites, and none of the aboveground facilities would be within a 100-year flood hazard area designated by the FEMA (ESRI & FEMA 2005).

Pipe Storage and Contractor Yards

Use of the proposed pipe storage and contractor yards would not affect surface waters.

Access Roads

Use of the access roads would not affect surface waters.

4.3.3.2 General Impact and Mitigation

Pipeline construction could affect surface waters in several ways. Clearing and grading of streambanks, in-stream trenching, trench dewatering, and backfilling could affect waterbodies through modification of aquatic habitat, increased sedimentation, increased turbidity, decreased dissolved oxygen concentrations, stream warming, or introduction of chemical contamination from fuels or lubricants. The crossing of irrigation canals could interrupt the flow of irrigation water, which could damage crops and reduce crop yields.

Spoil placed in floodplains during pipeline construction could cause an increase in flood levels or could be washed downstream or be deleterious to aquatic life. The removal of floodplain vegetation could reduce the ability of the floodplain to slow flood flows and filter pollutants and suspended sediment, resulting in increased erosion. Occasional high-intensity rainfalls can result in flash flooding within the Project area and can move large loads of sediment, gravel, and larger debris. This flash flooding is typically confined to natural desert washes and manmade drainage canals within the Project area. All construction within floodplains would be temporary, lasting only a few months during clearing, grading, trenching, pipe stringing, welding, lowering in, backfilling, and restoration operations. North Baja states that it would manage spoil piles in accordance with the provisions of the CDFG's SAA. For the A-Line, these provisions required that materials placed in seasonally dry portions of a stream that could be washed downstream or could be deleterious to aquatic life must be removed before inundation by high flows. Dry washes are also regulated by the CRWQCB, which may impose additional stipulations regarding spoil pile management such as requiring North Baja to leave gaps in the spoil piles in dry washes so the washes remain open during construction. In accordance with its CM&R Plan (see Appendix E), North Baja would prepare and submit an updated CM&R Plan before construction if necessary to incorporate any additional requirements of Federal, State, and local permits.

Drainage canals would not be disturbed by construction. All trench spoil would be returned to the trench, and all disturbed areas would be restored to preconstruction contours. Additionally, North

Baja would stabilize the right-of-way following construction. Because the Project would not add permanent fill in the floodplains, potential flood flows would not be displaced and long-term impacts are not anticipated. Valve #7 on the B-Line would be designed according to DOT standards outlined in Title 40 CFR Part 192, which requires valves to be built on a concrete pad that protects the valves from potential flood or erosion damage.

The greatest potential impact of pipeline construction on surface waters would result from the temporary suspension of sediments caused by in-stream construction or by erosion of cleared streambanks and rights-of-way. The extent of the impact would depend on sediment loads, stream velocity, turbidity, bank composition, and sediment particle size. These factors would determine the density and downstream extent of sediment migration. In-stream construction, particularly under flowing conditions, could cause the dislodging and transport of channel bed sediments, which could cause changes in downstream bottom contours and streamflow dynamics that could cause additional erosion and downstream sedimentation. Turbidity resulting from resuspension of sediments from in-stream construction or erosion of cleared right-of-way areas would reduce light penetration and photosynthetic oxygen production. In-stream work could also introduce chemical and nutrient pollutants from sediments if pollutants are present in the sediments at the crossing location and result in the movement of these pollutants to new locations downstream. Resuspension of deposited organic material and inorganic sediments could cause an increase in biological and chemical use of oxygen, resulting in reduced dissolved oxygen concentrations in the affected area. Lower dissolved oxygen concentrations could cause temporary displacement of motile organisms and may kill non-motile organisms within the affected area. Implementation of the measures described in North Baja's CM&R Plan, such as placement of extra work areas, general crossing procedures, spoil pile placement and control, and trench dewatering, would reduce the potential for degradation of downstream water quality as a result of suspension of sediments to less than significant levels.

Clearing and grading of streambanks would expose large areas of soil to erosional forces and would reduce the riparian vegetation along the cleared section of the stream. The use of heavy equipment for construction could cause compaction of near-surface soils, which could result in increased runoff into surface waterbodies. The increased runoff could transport additional sediment into the waterbodies, resulting in increased turbidity levels and sedimentation rates in the receiving waterbody. Erosion prior to right-of-way restoration and revegetation would be controlled through various procedures as described in North Baja's CM&R Plan. These procedures would reduce the potential for erosion, via either wind or water, to less than significant levels.

No alteration of existing drainage patterns would occur during construction that would result in significant erosion or flooding. The capacity of existing or planned stormwater drainage systems, irrigation water control structures, and municipal water supply reservoirs would not be affected. Adherence to the measures and best management practices in North Baja's CM&R Plan would ensure that the Project would not violate narrative and numerical water quality standards or result in polluted runoff.

Refueling of vehicles and storage of fuel, oil, or other hazardous materials near surface waters and spills from equipment working in waterbodies could also create a potential for contamination in waterbodies. If a spill were to occur, immediate downstream users of the water could experience degradation in water quality. Acute and chronic toxic effects on aquatic organisms could also result from such a spill. Implementation of the measures in North Baja's SPCC Plan (see Appendix F) would minimize the potential impact of a spill into surface waters during construction to less than significant levels.

Waterbody Construction and Mitigation Procedures

As discussed in Section 2.3, North Baja's CM&R Plan includes the portions of the FERC's Procedures that are relevant to protect waterbodies in the Project area. These measures include:

- locating all extra work areas at least 50 feet away from waterbody boundaries, where topographic conditions permit;
- limiting clearing of vegetation between extra work areas and the edge of the waterbody to the certificated construction right-of-way;
- maintaining adequate flow rates to protect aquatic life and prevent the interruption of existing downstream uses;
- restricting storage and refueling activities near surface waters;
- restricting spoil placement and control near surface waters;
- limiting use of equipment operating in the waterbody to that needed to construct the crossing;
- adhering to timing restrictions on in-stream work;
- requiring temporary erosion and sediment control at Rannells Drain and the two unnamed canals along the Arrowhead Extension and/or as required by regulatory agencies;
- requiring bank stabilization and recontouring after construction; and
- limiting use of herbicides or pesticides for right-of-way maintenance in or within 100 feet of a waterbody except as specified by the appropriate land management or State agency.

North Baja would obtain waterbody crossing permits from the COE under section 10 of the Rivers and Harbors Act of 1899 and section 404 of the CWA. North Baja would also obtain a section 401 Water Quality Certification from the CRWQCB. In addition, North Baja would obtain an SAA (section 1600 seq. of the California Fish and Game Code) from the CDFG (see Section 4.3.3.4). All construction activities at waterbody crossings would be in accordance with Federal, State, and local permit requirements. North Baja's implementation of its CM&R Plan and these mitigation measures would reduce impacts on surface waters to less than significant levels.

The majority of the waterbodies that would be crossed by the B-Line are dry washes that do not support fisheries, provide critical aquatic habitat, provide migratory passage for aquatic organisms, or have CRWQCB-designated recreation/high quality visual resource values. North Baja would cross these dry washes with typical cross-country construction methods using the same techniques that were implemented to construct the A-Line. As discussed above, the spoil piles would be managed in accordance with the provisions of the CDFG's SAA, which are expected to require that materials placed in seasonally dry portions of a stream that could be washed downstream or could be deleterious to aquatic life must be removed before inundation by high flows. Impacts on dry washes would be limited to the temporary alteration of beds and banks, loss of wildlife habitat, and possibly increased sediment load during initial storm events following construction. Discussions of impacts on the vegetation, wildlife, and special status species associated with these washes are included in Sections 4.5, 4.6, and 4.7, respectively.

With three exceptions, North Baja would cross all flowing waterbodies using the HDD or bore method, or the pipeline would be installed between the drain culverts and a road bed. Specifically, North Baja proposes to cross the Colorado River, the All-American Canal, and the East Highline Canal using the HDD method, which is described in Section 2.3.2. These three waterbodies are greater than 100 feet wide at the crossing location and are discussed in Section 4.3.3.3.

The only flowing waterbody proposed to be crossed using the open-cut method is Rannells Drain, which would be crossed by the B-Line at MP 11.4. Two unnamed canals that would be crossed by the Arrowhead Extension at MPs 0.5 and 1.5 would also be crossed using the open-cut method. The open-cut method is described in Section 2.3.2. Rannells Drain is an agricultural drain in the Palo Verde Valley that is periodically cleared of vegetation by the PVID. North Baja installed the A-Line in 2002 using the open-cut crossing method and the vegetation in the drain has fully recovered. The PVID has indicated it would be willing to perform maintenance clearing/dredging at the Rannells Drain crossing before construction of the B-Line in 2009, as long as it is done between August 2 and March 14 as agreed with the CDFG. Although Rannells Drain is shallow and stagnant, North Baja proposes to use sediment booms downstream of the trenching, which would contain sedimentation to the localized area. In accordance with the CM&R Plan, North Baja would attempt to complete actual in-stream trenching within 48 hours. Any sediment potentially released during construction would be removed the next time the PVID dredges the drain for agricultural purposes (expected to occur 1 year after construction) and would not be a permanent addition to the aquatic environment. Implementation of North Baja's CM&R Plan and the use of sediment booms would reduce the potential for degradation of downstream water quality as a result of suspension of sediments, including contaminated sediments, and any impact on water quality would be temporary.

With the exception of Rannells Drain and the two unnamed canals along the Arrowhead Extension, all other canals and drains along the B-Line are constrained within culverts under 18th Avenue and would either be crossed by locating the pipeline over the culverts and/or by boring underneath them; therefore, construction would avoid disturbance to the beds and banks of these waterbodies. Erosion control devices would be installed in accordance with the CM&R Plan to protect these waterbodies from sedimentation resulting from adjacent construction activities. Construction across canals and drains in the Palo Verde Valley would be completed in accordance with the PVID permit conditions and site-specific agreements with private landowners. Similar construction techniques were used to construct the A-Line resulting in no impact on canals and drains.

All canals and drains that would be crossed by the IID Lateral also flow through culverts. North Baja would cross these canals and drains using the same techniques and mitigation measures as proposed for the canals and drains that would be crossed by the B-Line. The IID Lateral would also cross the Alamo River (MP 32.3), which would be crossed by installing the pipeline in the road shoulder over the culverts that carry the water under Hunt Road. Use of this method would avoid impacts on the Alamo River.

Impacts on the integrity of structures, such as bridges, pipelines, utilities, or culverts due to erosion or conveyance of stormwater during construction or operation would be less than significant through the implementation of the measures proposed in North Baja's CM&R Plan. Additionally, no structures would be placed within waterbodies that could affect normal flow or increase the potential for flooding outside of the waterbody channel.

4.3.3.3 Major and Sensitive Waterbodies

Waterbodies may be considered sensitive to pipeline construction for a number of reasons, including, but not limited to, the width of the crossing; the presence of coldwater aquatic habitat,

fisheries, and imported or special status species; the presence of high-quality recreational, visual resource, or historic value; or the presence of impaired water or contaminated sediments. Waterbodies may also be considered sensitive if they are of special interest to a land management agency, resource agency, or Native American tribe.

Two major waterbodies (greater than 100 feet wide) would be crossed by the B-Line: the Colorado River (MP 0.2, 790 feet wide) and the All-American Canal (MP 79.8, 200 feet wide). The Colorado River is the primary source for most of the irrigation water in the Project area and is regulated by the COE under section 10 of the Rivers and Harbors Act of 1899 for navigable waters. The Colorado River is also considered sensitive because it provides potential habitat for the razorback sucker, a Federal and State-listed endangered fish species (see Section 4.7.4.4). The All-American Canal is under the jurisdiction of the BOR as part of a Federal irrigation system that diverts water from the Colorado River at the Imperial Dam near Yuma, Arizona, and takes it across the Colorado Desert to provide water through a series of smaller canals into the Imperial and Coachella Valleys. The canal is managed by the IID and is scheduled to have a lining installed between 2006 and 2007, before the proposed construction of the IID Lateral (BOR 1994, Remington 2005).

The IID Lateral would cross two waterbodies greater than 100 feet wide: the All-American Canal (MPs 2.4 and 8.1, 200 feet wide) and the East Highline Canal (MP 27.5, 190 feet wide). The East Highline Canal delivers municipal water to the City of Holtville via an intake on Pear Canal (Mendez 2005). This municipal water intake is located at gate 30L, approximately 6 miles downstream from the East Highline Canal crossing.

North Baja proposes to cross the Colorado River, All-American Canal (three crossings), and the East Highline Canal using the HDD method. As discussed in Section 2.3, this technique involves drilling a pilot hole under the waterbody and banks, then enlarging that hole through successive reamings until the hole is large enough to accommodate the pipe. Throughout the process of drilling and enlarging the hole, a slurry made of naturally occurring non-toxic materials, such as bentonite clay and water, would be circulated through the drilling tools to lubricate the drill bit, remove drill cuttings, and hold the hole open. This slurry is referred to as drilling mud. Pipe sections long enough to span the entire crossing would be staged and welded along the construction work area on the opposite side of the waterbody and then pulled through the drilled hole.

Unlike a conventional open-cut crossing, the HDD method would not alter or remove streambed or streambank habitat, cause in-stream sedimentation, or interfere with fish movement. The primary impact that could occur as a result of an HDD is an inadvertent release of drilling mud (frac-out) directly or indirectly into the waterbody. Drilling mud may leak through previously unidentified fractures in the material underlying the river or canal bed, in the area of the mud pits or tanks, or along the path of the drill due to unfavorable ground conditions. Although drilling mud consists of naturally occurring nontoxic materials, such as bentonite clay and water, in larger quantities the release of drilling mud into a waterbody could affect fisheries or other aquatic organisms by settling and temporarily inundating the habitats used by these species. This impact is less likely in fast-moving water, which can disperse the drilling mud over a large area. Moreover, the impact of a frac-out is substantially less than the impact associated with an open-cut crossing.

The Colorado River and the All-American Canal were crossed by the A-Line in 2002 using the HDD method. One minor frac-out occurred on land near the HDD entry point at the Colorado River; no frac-outs occurred in the water. Geotechnical investigations conducted at these crossing locations indicate that stiff cohesive soils are present that are conducive for the HDD crossing method. Preliminary geotechnical investigations conducted at the IID Lateral crossing locations of the All-American and East

Highline Canals indicate that the HDD crossing method would be appropriate at these locations, although North Baja would conduct additional geotechnical investigations to confirm this preliminary assessment.

North Baja has submitted site-specific HDD crossing plans for the Colorado River, All-American Canal, and East Highline Canal that show the drill entry and exit workspaces, the pipe fabrication and stringout areas, and the drill profiles. North Baja has also submitted an HDD Plan (see Appendix G) that describes the HDD process and how it would be monitored. The HDD Plan describes the agency notification procedures and the corrective action and cleanup procedures that would be followed in the event of a frac-out to land and the abandonment procedures that would be followed if it is necessary to abandon the drill hole. Although the HDD Plan addresses corrective action and cleanup procedures for a frac-out to land, it does not provide this information for a frac-out that occurs in the water. Therefore, **the Agency Staffs recommend that:**

- **North Baja shall prepare a revised HDD Plan that specifies the corrective action and cleanup procedures that would be followed in the event a frac-out occurs in the water during an HDD operation. North Baja shall file the revised plan with the FERC and the CSLC for the review and written approval of the Director of the Office of Energy Projects (OEP) and the Executive Officer of the CSLC before commencement of any HDD operation.**

With the implementation of the Agency Staffs' recommendation, North Baja's site-specific crossing plans and HDD Plan would reduce potential impacts to less than significant levels.

4.3.3.4 Streambed Alteration Agreement

The Colorado River, the Alamo River, 73 irrigation drains and canals, and 265 dry desert washes would be crossed by the North Baja Pipeline Expansion Project in California. The CDFG requires project Applicants to notify the CDFG of any activity that would divert, obstruct, or change the natural flow of the bed, channel, or bank (including associated riparian habitat) of a river, stream, or lake; or use material from a streambed prior to the Applicant's commencement of the activity. Streams include, but are not limited to, intermittent and ephemeral streams, rivers, creeks, dry washes, sloughs, blue-line streams, and watercourses with subsurface flow. The irrigation drains and canals that would be crossed by the Project are not under the jurisdiction of the CDFG. The issuance of an SAA (section 1600 seq. of the California Fish and Game Code) for projects subject to the CEQA requires CEQA compliance actions by the CDFG as a responsible agency. For the CDFG to process an SAA, the EIS/EIR document must incorporate information regarding impacts on lakes, streams, and associated habitat, including but not limited to the following items:

- a delineation of lakes, streams, and associated habitat that would be directly or indirectly impacted by the proposed Project;
- details on the biological resources (flora and fauna) associated with the lands and/or streams;
- identification of the presence or absence of sensitive plants, animals, or natural communities;
- a discussion of environmental alternatives;
- a discussion of avoidance measures to reduce Project impacts;

- a discussion of potential mitigation measures required to reduce Project impacts to less than significant levels; and

- a discussion of potential adverse impacts from any increased runoff, sedimentation, soil erosion, and/or urban pollutants on streams and watercourses on or near the Project site, with mitigation measures proposed to alleviate such impacts.

The CDFG, as a responsible agency under the CEQA, may consider the local jurisdiction's (lead State agency) Negative Declaration or EIS/EIR for the Project. If the EIS/EIR does not fully identify potential impacts on lakes, streams, and associated resources, and provide adequate avoidance, mitigation, monitoring, and reporting commitments, additional CEQA documentation would be required before execution (signing) of the SAA.

Existing Biological Resources

Biological resources, including wetlands, vegetation, fish, wildlife, and special status species present in streambeds along the proposed pipeline routes are discussed in detail in Sections 4.4, 4.5, 4.6, and 4.7. These discussions include descriptions of habitat types crossed, aquatic and terrestrial species occurring or potentially occurring along the routes, and detailed reviews of protected species and their habitats.

The Colorado River is the prominent surface water feature in the region. This waterbody is a warmwater fishery that provides habitat for several special status species. The riparian vegetation adjacent to the river also provides habitat for a variety of wildlife. Additionally, the Colorado River is an important contributor to the region's biodiversity.

Two vegetative types are generally found along the desert washes crossed by the Project: Sonoran creosote bush scrub and desert wash woodland. Desert wash woodland is the dominant community along well-defined washes. Although not the most common vegetation type crossed by the pipeline routes, desert wash woodland provides greater structural diversity than the Sonoran creosote bush scrub due to its taller vegetation and higher density of vegetation. These characteristics increase wildlife value of the desert wash woodland habitat type.

Biological Studies Conducted

In accordance with the requirements of the SAA, a field-based habitat assessment of the proposed B-Line route was conducted before construction of the A-Line in 2000, and similar habitat assessments of the IID Lateral and the Arrowhead Extension were conducted in 2005 and 2006, respectively, to determine the potential for the occurrence of protected species or their habitats and to ascertain information on vegetative communities within the Project area. Species-specific surveys were conducted for protected species identified by agencies as potentially occurring along the route throughout 2005 and in the Spring of 2006. North Baja's survey methods were designed in consultation with appropriate Federal and State agencies. Additional discussion of surveys for protected species is included in Section 4.7.

Impact Analysis

The evaluation of potential impacts of the Project on streambeds focuses on biological resources associated with the feature, including wetlands, vegetation, fish, wildlife, and special status species. In general, impacts on biological resources within the Project area would be minor and temporary. Direct impacts would be limited to increased erosion and potential sedimentation of the dry washes during initial

storm events following construction. Clearing of riparian vegetation would remove some available habitat and would temporarily displace wildlife species to available adjacent habitats. Some individuals of less mobile species may be killed or injured by construction activities.

No impact on the Colorado River and associated riparian corridor is expected because the river and associated riparian vegetation would be crossed using the HDD method (see Sections 2.3.2 and 4.3.3.3) and the drill entry and exit points would be outside of the riparian zone.

Detailed discussions of potential impact on biological resources resulting from the North Baja Pipeline Expansion Project are included throughout Section 4. Impacts on waterbodies that would be crossed by the Project are discussed in Section 4.3.3, impacts on vegetation are discussed in Section 4.5, impacts on wildlife and aquatic resources are discussed in Section 4.6, and impacts on special status species are discussed in Section 4.7.

Impact Avoidance, Minimization, and Mitigation Measures

Specific mitigation measures to minimize impact on biological resources are discussed in the respective subsections of Section 4. Additionally, North Baja has developed its CM&R Plan (see Appendix E) to minimize impacts on the Project area during construction. The CM&R Plan includes a discussion of proposed restoration activities and other mitigation measures.

4.3.4 Groundwater and Surface Water Uses During Construction

Hydrostatic Test Water

Pipeline integrity would be verified through hydrostatic testing, which is conducted by filling the pipeline with water, pressurizing it, and then checking for pressure loss resulting from leakage. North Baja would use both groundwater and surface water sources for hydrostatic testing.

Water for testing the piping within the Ehrenberg Compressor Station would be obtained from an existing irrigation canal adjacent to the compressor station property or an existing well located on the compressor station site. Both sources are hydrologically connected to the Colorado River. After testing, the water would be discharged into lined irrigation canals at the site or into the D-10 Canal.

North Baja would hydrostatically test the B-Line with water obtained either from the same water sources at the Ehrenberg Compressor Station site or directly from the All-American Canal at the location of the pipeline crossing. The water would be discharged to the All-American Canal when testing is complete.

The Arrowhead Extension and piping within the Blythe-Arrowhead Meter Station would be tested with water obtained from the PVID, local wells, or a commercial water source. After testing, the water would be discharged into the C-05 Canal.

North Baja would hydrostatically test the IID Lateral with water obtained from the All-American Canal through an agreement with the IID to use approximately 7 acre-feet of water and discharge it directly back into the All-American Canal or into other IID irrigation facilities. The quantities of hydrostatic test water required for each facility and the water sources are listed in Table 4.3.4-1.

TABLE 4.3.4-1

Hydrostatic Test Water Requirements for the North Baja Pipeline Expansion Project

Facility	Water Withdrawn (gallons)	Source
B-Line; Ehrenberg Compressor Station	11,201,000 [a]	Existing well at the Ehrenberg Compressor Station site, existing irrigation canal adjacent to the Ehrenberg Compressor Station Site, or the All-American Canal
Arrowhead Extension; Blythe-Arrowhead Meter Station	586,256	Palo Verde Irrigation District, local wells, or commercial water source
IID Lateral	2,366,000	All-American Canal

[a] The water would be withdrawn in phases coinciding with North Baja's proposed construction schedule (see Section 2.4).

The withdrawal of large volumes of water from surface water sources could temporarily affect the recreational and biological uses of the resource if the diversions constitute a large percentage of the source's total flow or volume. Hydrostatic test water withdrawals could also result in the temporary loss of habitat, changes in water temperature and dissolved oxygen levels, and entrainment or impingement of fish or other aquatic organisms. The withdrawal of large volumes of water from private or public water supply wells could exceed the delivery capacity of the system or well.

North Baja would minimize the potential for these effects by adhering to the hydrostatic testing measures included in its CM&R Plan (see Appendix E). These measures include screening intake hoses and regulating the withdrawal of hydrostatic test water at a rate that would not adversely affect aquatic resources or downstream flows. The fill volume would be limited to 1,500 gallons per minute or 10 percent of streamflow, whichever is less. Maintaining the prescribed withdrawal rate would avoid a reduction in streamflow quantity such that there would not be a flow change that would significantly damage either beneficial uses or aquatic life within the source waters. The rate of water withdrawal from private sources would be limited so as not to exceed the delivery capacity of the system or well. Water would be filtered before entering the pipe and no chemicals would be added to the test water. North Baja would conduct all hydrostatic test activities in accordance with its applicable permits (including coordination with the BOR) and DOT pipeline safety regulations as set forth in Title 49 CFR Part 192. Implementation of these measures would reduce impacts on groundwater and surface waters resulting from hydrostatic testing to less than significant levels. Sections 4.6.3 and 4.7 describe potential impacts of hydrostatic testing on aquatic resources and special status species, respectively.

The potential impacts resulting from the discharge of hydrostatic test water include soil erosion and stream scour and subsequent degradation of water quality. North Baja would discharge hydrostatic test water in accordance with the requirements of its NPDES permit. The discharge rate would be regulated, and water would be discharged through energy dissipation devices and sediment barriers, as necessary, to prevent erosion or excessive flow. The use of such devices would prevent adverse effects on the operation of irrigation water control structures, gates, or valves. No municipal water supply reservoirs would be affected by the proposed Project.

Dust Control Water

Water would also be needed to control fugitive dust generated during construction activities (see Sections 4.2 and 4.11 and Appendix L). The water would likely be obtained from the same sources that would provide water for hydrostatic testing activities (see Table 4.3.4-1). The impacts on water resources due to water withdrawals for dust control would be the same as those discussed above for hydrostatic test

water withdrawals. The rate of water withdrawal for dust control would be limited so as not to exceed the delivery capacity of the system or affect downstream uses.

Because North Baja did not provide estimates of the quantities of water that would be required for dust control or specify the water sources or measures to protect aquatic resources during dust control water withdrawals, **the Agency Staffs recommend that:**

- **North Baja shall prepare a revised Project-wide Dust Control Plan that specifies the following:**

  a. the sources of water that would be used for dust control;

  b. the anticipated quantities of water that would be required; and

  c. the measures that would be implemented to prevent fish and fish egg entrainment during dust control water withdrawals.

  The revised Project-wide Dust Control Plan shall be filed with the FERC and the CSLC for the review and written approval of the Director of OEP and the Executive Officer of the CSLC before construction.

4.3.5 No Project Alternative

Under the No Project Alternative, the FERC would deny North Baja's application for a Certificate and a Presidential Permit amendment, the CSLC would deny North Baja's application for an amendment to its right-of-way lease across California's Sovereign and School Lands, and the BLM would deny North Baja's application to amend its existing Right-of-Way Grant and obtain a Temporary Use Permit for the portion of the Project on Federal lands. The No Project Alternative means that the Project would not go forward and the Project-related facilities would not be installed. Accordingly, none of the potential impacts on groundwater and surface water resources identified for the construction and operation of the proposed Project would occur.

Because the proposed Project is privately funded, it is unknown whether North Baja would fund another energy project in California. However, should the No Project Alternative be selected, the energy needs identified in Section 1.1 would likely be addressed through other means, such as through other LNG or natural gas-related pipeline projects. Such projects may result in potential environmental impacts of the nature and magnitude of the proposed Project as well as impacts particular to their respective configurations and operations; however, these impacts cannot be predicted with any certainty at this time.

4.4 WETLANDS

4.4.1 Significance Criteria

An adverse impact on wetlands would be considered significant and would require mitigation if Project construction or operation would:

- fill or alter a wetland resulting in an adverse change in its hydrology or soils, or the composition of vegetation of a unique, rare, or special concern wetland community; or
- cause short- or long-term violations of Federal, tribal, or State water quality standards for streams that lead to wetlands, measured as in-stream elevated turbidity readings or decreased dissolved oxygen levels.

4.4.2 Existing Wetland Resources

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of wetland vegetation adapted for life in saturated soil conditions (COE 1987). Wetlands can be a source of substantial biodiversity and serve a variety of functions that include providing wildlife habitat, recreational opportunities, flood control, and naturally improving water quality.

Wetlands in the Project area are regulated at the Federal and State levels. On the Federal level, the COE has authority under section 404 of the CWA to review and issue permits for activities that would result in the discharge of dredged or fill material into waters of the United States, including wetlands. Section 401 of the CWA requires that proposed dredge and fill activities under section 404 be reviewed and certified by the designated State agency, in this case the CRWQCB, so that the proposed Project would meet State water quality standards.

For the North Baja Pipeline Expansion Project, wetlands were delineated using the methodology described in the COE Wetlands Delineation Manual (COE Manual), Technical Report Y-87-1. The delineations were conducted during July through October 2000 for the wetlands that would be crossed by the B-Line and during September 2005 for the wetlands that would be crossed by the IID Lateral. On September 23, 2005, North Baja met with representatives from the COE who approved of North Baja's wetland delineation methods after reviewing selected wetlands along the B-Line and IID Lateral. A total of 18 COE jurisdictional wetlands (2.7 miles) would be crossed by the proposed Project. No isolated, non-COE jurisdictional wetlands would be crossed by the Project. The location, wetland identifier, FWS National Wetlands Inventory (NWI) classification, crossing length, and approximate acreage that would be affected by construction and operation of each wetland are listed in Table 4.4.2-1.

Pipeline Facilities

Based on North Baja's field surveys, the proposed pipeline facilities would cross 18 wetlands for a total distance of approximately 2.7 miles. The B-Line would cross 13 of these wetlands for a total crossing length of 13,995 feet (2.7 miles). Ten of these would be palustrine scrub-shrub wetlands and three would be palustrine emergent wetlands. Two of the scrub-shrub wetlands are adjacent to the Colorado River between MPs 0.1 and 0.2. Vegetation in these wetlands includes arrow weed, tamarisk, and willow, as well as a few other species. Eight other scrub-shrub wetlands are between MPs 28.2 and 31.3. All of these wetlands are sodic seasonal wetlands with visible efflorescence (salt) covering the surface. The vegetation in these wetlands is dominated by tamarisk, iodine bush, and greasewood.

TABLE 4.4.2-1

Wetlands Crossed by the North Baja Pipeline Expansion Project [a]

Approximate Milepost	County, State	Wetland Identifier	National Wetlands Inventory (NWI) Classification [b]	Crossing Length (feet)	Temporary Construction Impact (acres) [c]	Permanent Impact (acres) [d]
B-Line						
0.1	La Paz, AZ	P26-WE-1	PSS/PEM	250 [d]	0.0	0.0
0.2	La Paz, AZ	P24-WE-1	PSS	50 [d]	0.0	0.0
2.7	Riverside, CA	N55-WE-3	PEM	70	0.2	0.0
28.2	Imperial, CA	N68-WE-29	PSS	360	1.0	0.1
28.3	Imperial, CA	N69-WE-29	PSS	970	2.5	0.2
28.5	Imperial, CA	N70-WE-29	PSS	515	1.7	0.1
28.8	Imperial, CA	CWE-1	PSS	194	0.5	<0.1
29.1	Imperial, CA	CWE-2	PSS	151	0.4	<0.1
29.1	Imperial, CA	CWE-3	PSS	287	0.7	0.1
29.7	Imperial, CA	CWE-4	PSS	9,630	23.2	2.2
31.3	Imperial, CA	CWE-5	PSS	1,483	5.4	0.3
79.8	Imperial, CA	D18-WE-81C	PEM	15 [e]	0.0	0.0
79.8	Imperial, CA	P1-WE-80	PEM	20 [e]	0.0	0.0
Subtotal B-Line				*13,995*	*35.6*	*3.0*
Arrowhead Extension			-None-			
Subtotal Arrowhead Extension				*0.0*	*0.0*	*0.0*
IID Lateral						
27.5	Imperial, CA	East Highline Canal – East	PSS	50 [e]	0.1	0.0
27.6	Imperial, CA	East Highline Canal – West	PSS	50 [e]	0.0	0.0
32.3	Imperial, CA	Alamo River	PSS	340 [f]	0.0	0.0
43.4	Imperial, CA	Acacia Lateral Canal	PSS	40 [g]	0.0	0.0
44.1	Imperial, CA	Alder Lateral Canal	PSS	18 [g]	0.0	0.0
Subtotal IID Lateral				*498*	*0.0*	*0.0*
Project Total				14,493	35.7	3.0

[a] Does not include dry wash crossings (see Section 4.3.3.2).

[b] NWI Wetland Classification (Cowardin et al. 1979):

PSS = Palustrine scrub-shrub

PEM = Palustrine emergent

[c] Acres include the construction right-of-way and extra workspaces.

[d] Permanent wetland vegetation type conversion impacts are associated with scrub-shrub wetlands. Operational requirements (corrosion/leak surveys) allow a 10-foot-wide corridor centered over the pipeline to be maintained in an herbaceous state; however, North Baja does not plan to conduct regular vegetation maintenance.

[e] Would be crossed by horizontal directional drill.

[f] Would not be affected because the pipeline would be installed in the road shoulder outside the wetland boundary.

[g] Would be crossed by the bore method.

Of the three palustrine emergent wetlands that would be crossed by the B-Line, one wetland is in a topographic depression between an irrigation canal levee road and an adjacent agricultural field at MP 2.7. Dominant species in this wetland include nut sedge, Bermuda grass, and barnyard grass. The other two emergent wetlands are on the north and south banks of the All-American Canal at MP 79.8.

The drains that would be crossed in the Palo Verde Valley contain vegetation typical of the wetland communities in the area. However, these drains are not considered jurisdictional by the COE and are occasionally dredged.

No wetlands would be crossed by the Arrowhead Extension.

The IID Lateral would cross five palustrine scrub-shrub wetlands for a total crossing length of 498 feet (less than 0.1 mile). Of these, two wetlands are adjacent to the East Highline Canal between MPs 27.5 and 27.6. Vegetation in these wetlands includes arrow weed, tamarisk, and salt bush. A scrub-shrub wetland dominated by tamarisk is adjacent to the Alamo River at MP 32.3. At the Acacia Lateral Canal crossing at MP 43.4, a tamarisk-dominated scrub-shrub wetland would be crossed. A scrub-shrub wetland associated with the Alder Lateral Canal that is dominated by tamarisk, salt bush, and arrow weed would be crossed at MP 44.1.

Aboveground Facilities

No wetlands are present at any of the aboveground facility sites.

Pipe Storage and Contractor Yards

No wetlands are at the four proposed pipe storage and contractor yards.

Access Roads

No wetlands are along the proposed access roads.

4.4.3 General Impact and Mitigation

Although wetlands occur along both the B-Line and the IID Lateral, construction impacts would primarily occur on wetlands along the B-Line. Construction of the B-Line would affect a total of 35.6 acres of wetlands, including 0.2 acre of emergent wetland and 35.4 acres of scrub-shrub wetlands (see Table 4.4.2-1). Of the total 35.6 acres of disturbance along the B-Line, about 26.9 acres were previously disturbed during construction of the A-Line. About 8.7 acres of new wetland disturbance would result from construction of the B-Line. Four wetlands, two associated with the Colorado River crossing and two associated with the All-American Canal crossing, would be avoided by the use of the HDD crossing method at these river and canal crossings (see Table 4.4.2-1).

Wetland impacts along the IID Lateral would be avoided by use of the HDD crossing method at the East Highline Canal, constructing in the road shoulder outside of the wetland boundary at the Alamo River, or by use of the bore crossing method at the Acacia Lateral and Alder Lateral Canals. However, about 0.1 acre of scrub-shrub wetlands would be affected by North Baja's request to locate extra workspace within the wetland that would be crossed on the east side of the Highline Canal at MP 27.5.

The primary impact of pipeline construction and right-of-way maintenance activities on wetlands would be the temporary and permanent alteration of wetland vegetation. These effects would be greatest during and immediately following construction. Generally, the wetland vegetation community would

eventually transition back into a community with functionality similar to that of the wetland before construction. In emergent wetlands, the herbaceous vegetation would regenerate quickly (typically within 1 to 3 years). Scrub-shrub wetlands could take several years to reach functionality similar to preconstruction conditions depending on the age and complexity of the system. However, given the fast growing species (primarily tamarisk) that dominate the scrub-shrub wetlands that would be affected and the results of North Baja's revegetation monitoring for the A-Line, regeneration is expected to occur within a shorter time frame.

Following revegetation, there would be little permanent impact on emergent wetland vegetation in the maintained right-of-way because these areas naturally consist of and would remain as open and herbaceous communities. Herbaceous wetland vegetation in the pipeline right-of-way is not generally mowed or otherwise maintained, although the FERC's Procedures allows annual maintenance of a 10-foot-wide strip centered over the pipeline. A 10-foot-wide corridor centered over the pipeline could potentially be maintained in an herbaceous condition to facilitate corrosion/leak surveys. Permanent impacts would occur on scrub-shrub wetlands if annual maintenance were conducted within this 10-foot-wide strip preventing the scrub-shrub species in this area from reaching mature size. Approximately 3.0 acres of scrub-shrub wetlands along the B-Line could be permanently affected by vegetation type conversions that would be primarily impacts on the structure of the wetlands (i.e., result in more herbaceous vegetation and fewer shrubs), but would not greatly reduce the existing wetland functions or amount of wetlands in the Project area. However, North Baja does not routinely conduct vegetation maintenance along its right-of-way; therefore, permanent impacts on wetlands would not be expected to occur.

Of the 13 wetlands along the B-Line route, 9 were affected during construction of the A-Line, and 4 were previously avoided by HDD crossings. North Baja conducted post-construction monitoring of the nine previously affected wetlands and reports that the wetlands have rapidly revegetated to their preconstruction condition with both native (salt bush) and non-native (tamarisk) species. Because of the high concentration of salts within these wetlands, few native species are able to colonize these areas, and the presence of tamarisk propagules in the wetland topsoil and in adjacent areas favors recolonization and dominance by this non-native species.

Other types of impacts associated with construction of the pipeline could include temporary changes in wetland hydrology and water quality. During construction, failure to segregate topsoil over the trenchline in non-saturated wetlands could result in the mixing of the topsoil with the subsoil. This disturbance could result in altered biological activities and chemical conditions in wetland soils and could affect the re-establishment and natural recruitment of native wetland vegetation after restoration. In addition, inadvertent compaction and rutting of soils during construction could result from the movement of heavy machinery and the transport of pipe sections. The resulting alteration of the natural hydrologic patterns of the wetlands could inhibit seed germination or increase the potential for siltation. The discharge of stormwater, trench water, or hydrostatic test water could result in silt-laden water entering a wetland and cause the release of chemical and nutrient pollutants from sediments. Construction clearing activities and disturbance of wetland vegetation could also temporarily affect the wetland's capacity to buffer flood flows and/or control erosion. The procedures that North Baja would implement to avoid or minimize these impacts are discussed below.

Wetland Construction and Mitigation Procedures

In general, wetland impacts would be minimized by avoidance, mitigation of impacts, and compensation in accordance with Federal, State, and local regulations.

North Baja would avoid impacts on wetlands by implementing the HDD crossing method at six wetland crossings, and implementing the bore crossing method at two wetland crossings. North Baja would further avoid impacts on wetlands by locating the IID Lateral within existing road shoulders. Additionally, North Baja would avoid and minimize impacts on wetlands by its proposal to install the B-Line 25 feet south and west of North Baja's existing A-Line and work over the existing pipeline.

North Baja would mitigate construction-related impacts by implementing its CM&R Plan as discussed below and by complying with the COE's section 404 and the CRWQCB's section 401 permit conditions. The COE has determined that the North Baja Pipeline Expansion Project would qualify for a nationwide permit under the COE's section 404 permit program. Nationwide permits are a type of general permit issued by the COE for certain activities having minimal impacts. Projects that qualify for a nationwide permit are not required to demonstrate compliance with the section 404(b)(1) guidelines that restrict discharges of dredged or fill material where a less environmentally damaging alternative exists. Should the COE later determine that an individual section 404 permit is necessary, as part of its section 404 permit application North Baja would be expected to demonstrate that it has taken appropriate and practicable steps to minimize wetland impacts in compliance with the section 404(b)(1) guidelines that restrict discharges of dredged or fill material where a less environmentally damaging alternative exists. In order for the COE to determine whether practicable alternatives have been taken, North Baja is required to avoid wetland impacts to the maximum extent possible. When unavoidable wetland impacts are proposed, the COE and the CRWQCB would require that all practicable actions be taken to mitigate those impacts. This is consistent with the CEQ's *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act* (Title 40 CFR Part 1508.20), which defines mitigation to include the following criteria:

- avoiding the impact altogether by not taking a certain action or parts of an action;
- minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; and
- compensating for the impact by replacing or providing substitute resources or environments.

North Baja would implement the wetland construction and restoration measures contained in its CM&R Plan (see Appendix E). The CM&R Plan incorporates many of the measures of the FERC's Procedures that are relevant to protect wetlands within the Project area. Some of the measures pertaining to wetland crossings specified in the FERC's Procedures and/or to which North Baja has committed, include:

- prohibiting storage of hazardous materials, chemicals, fuels, and lubricating oils within a wetland or within 100 feet of a wetland boundary;
- requiring that native vegetation on the right-of-way within wetlands be cut at ground level, leaving existing root systems in place to promote regrowth;
- requiring segregation of the uppermost 1 foot of wetland topsoil from the underlying subsoil in areas disturbed by trenching;

- limiting the operation of construction equipment within wetlands to that equipment essential for clearing, excavation, pipe installation, backfilling, and restoration activities;

- requiring all nonessential equipment to traverse around wetlands using upland access roads where wetland soils are prone to rutting and/or cannot be appropriately stabilized; and

- minimizing duration of construction-related disturbance within wetlands.

One measure of the FERC's Procedures that North Baja did not incorporate into its CM&R Plan is the provision to limit the width of the construction right-of-way in wetlands to 75 feet or less. North Baja did not incorporate this requirement because, of the 18 wetlands that would be affected by the Project, 6 would be avoided by HDD crossings, 2 would be avoided by bore crossings, and 1 would be avoided by constructing within the road shoulder adjacent to the Alamo River. The one emergent wetland that would be affected would be crossed within the 60-foot-wide construction right-of-way along 18th Avenue. The remaining eight wetlands that would be crossed are scrub-shrub wetlands that contain a high percentage of tamarisk, which is considered a noxious weed species.

Additionally, North Baja is requesting approval to locate extra workspaces within five wetlands, four along the B-Line and one along the IID Lateral. The FERC's Procedures requires that all extra workspaces (such as staging areas and additional spoil storage areas) be located at least 50 feet away from wetland boundaries, except where the adjacent upland consists of actively cultivated or rotated cropland or other disturbed land. North Baja states that use of these extra workspaces would affect 2.7 acres of tamarisk-dominated scrub-shrub wetlands (2.6 acres along the B-Line and 0.1 acre along the IID Lateral). Of the total 2.7 acres that would be affected, 1.8 acres were previously disturbed during construction of the A-Line. Table E-2 in the CM&R Plan (see Appendix E) lists the specific wetlands and workspace requirements.

The Agency Staffs agree that it would not be necessary for North Baja to reduce the width of its construction right-of-way to 75 feet in wetlands that are predominantly tamarisk. The Agency Staffs approve North Baja's request to locate extra workspaces in the five wetlands specified in Table E-2 of its CM&R Plan, and also agree that the other measures of the FERC's Procedures that are omitted from the CM&R Plan (e.g., do not cut trees outside of the approved construction work area to obtain timber for riprap or equipment mats; use no more than two layers of timber riprap to support equipment on the construction right-of-way) are not necessary in the arid climate that would be crossed or are not directly applicable to the Project.

North Baja indicated that it has initiated consultation with the CRWQCB. In its review of the Project to determine whether to issue a section 401 permit, the CRWQCB may impose permit conditions requiring mitigation measures in addition to those described above. In accordance with the CM&R Plan, North Baja would prepare and submit an updated CM&R Plan before construction if necessary to incorporate any additional requirements of Federal, State, and local permits. North Baja's adherence to its CM&R Plan and compliance with the COE's section 404 and the CRWQCB's section 401 permit conditions would adequately protect wetland resources crossed by the pipeline route and reduce impacts to less than significant levels.

4.4.4 Site-specific Impact and Mitigation

The two wetlands associated with the Colorado River, two wetlands associated with the All-American Canal, and two wetlands associated with the East Highline Canal would be avoided by the HDDs of these waterbodies. Two wetlands associated with the Acacia Lateral and Alder Lateral Canals

would be avoided by North Baja's proposal to bore beneath these features. In addition, the wetland associated with the Alamo River would be avoided by constructing the pipeline within the road shoulder outside of the wetland boundaries.

North Baja's clearing of a 105-foot-wide construction right-of-way through the eight scrub-shrub wetlands located between MPs 28.2 and 31.3 would reduce the amount of tamarisk occurring along the pipeline route. The CM&R Plan contains a measure to remove all tamarisk trees and shrubs including stumps and root systems. North Baja has the right to maintain a 10-foot-wide strip centered over the pipeline if necessary for periodic corrosion/leak surveys. A 10-foot-wide maintained corridor would result in the permanent conversion of about 3.0 acres of scrub-shrub wetland to emergent wetland. However, as previously discussed, North Baja has not conducted vegetation maintenance along the A-Line and does not propose to conduct annual vegetation maintenance in the areas associated with the North Baja Pipeline Expansion Project. As documented in North Baja's post-construction monitoring reports, wetlands affected by construction of the A-Line have largely revegetated to a state similar to preconstruction conditions. Therefore, no long-term or significant adverse impact on wetlands is expected to result from the North Baja Pipeline Expansion Project.

The emergent wetland at MP 2.7 would be within the 60-foot-wide construction right-of-way along 18th Avenue. Impacts on this wetland would be temporary and minor, and the wetland would be expected to revegetate quickly.

The Project would not result in the placement of fill within wetlands, and wetland topsoil and hydrology would be restored at the affected wetlands. No streams run through the affected wetlands, therefore, construction through wetlands would not result in significant water quality impacts on streams.

4.4.5 No Project Alternative

Under the No Project Alternative, the FERC would deny North Baja's application for a Certificate and a Presidential Permit amendment, the CSLC would deny North Baja's application for an amendment to its right-of-way lease across California's Sovereign and School Lands, and the BLM would deny North Baja's application to amend its existing Right-of-Way Grant and obtain a Temporary Use Permit for the portion of the Project on Federal lands. The No Project Alternative means that the Project would not go forward and the Project-related facilities would not be installed. Accordingly, none of the potential impacts on wetlands identified for the construction and operation of the proposed Project would occur.

Because the proposed Project is privately funded, it is unknown whether North Baja would fund another energy project in California. However, should the No Project Alternative be selected, the energy needs identified in Section 1.1 would likely be addressed through other means, such as through other LNG or natural gas-related pipeline projects. Such projects may result in potential environmental impacts of the nature and magnitude of the proposed Project as well as impacts particular to their respective configurations and operations; however, these impacts cannot be predicted with any certainty at this time.